

US EPA RECORDS CENTER REGION 5



482379

**FOCUSED SITE INSPECTION PRIORITIZATION  
SITE EVALUATION REPORT**

**TITANIUM METALS CORPORATION  
100 TITANIUM WAY  
TORONTO, OHIO**

**EPA ID NO. OHD 098 435 134**

**Prepared for**

**U.S. ENVIRONMENTAL PROTECTION AGENCY  
Site Assessment Section  
77 West Jackson Boulevard  
Chicago, IL 60604**

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## **1.0 INTRODUCTION**

Under Contract No. 68-W8-0084, Work Assignment No. 35-5JZZ, PRC Environmental Management, Inc. (PRC), has evaluated the Titanium Metals Corporation (Timet) site in Toronto, Jefferson County, Ohio, as a potential candidate for the National Priorities List and has prepared this site evaluation report. Using the Hazard Ranking System, PRC performed focused site inspection prioritization activities for the site to determine whether, or to what extent, the site poses a threat to human health and the environment. This report presents the results of PRC's evaluation and summarizes the site conditions and targets pertinent to the migration and exposure pathways associated with the site. PRC obtained information from U.S. Environmental Protection Agency (EPA) Region 5 files, Ohio Environmental Protection Agency (OEPA) files, U.S. Geological Survey (USGS) topographic maps, National Wetland Inventory (NWI) maps, and the site reconnaissance conducted by PRC on March 3, 1995.

This report has five sections, including this introduction. Section 2.0 describes the site and provides a brief site history. Section 3.0 provides information about previous investigations conducted at the site. Section 4.0 provides information about the four migration and exposure pathways (groundwater migration, surface water migration, soil exposure, and air migration) that can be scored. Section 5.0 summarizes conditions at the site. References used by PRC to prepare this report are listed at the end of the text. In addition, the appendix to this report contains photographs taken during the site reconnaissance.

## **2.0 SITE DESCRIPTION AND HISTORY**

The Timet site is an active titanium processing plant located at 100 Titanium Way in Toronto, Jefferson County, Ohio (latitude 40°26'49" N and longitude 80°36'28" W). In 1957, Timet purchased the site from the Ohio River Steel Company, which operated a steel mill on the property. The date when the Ohio River Steel Company began operations at the site is unknown.

The Timet site covers about 51 acres in a residential area. The site is bordered on the north by Jeddo Run Creek, a tributary of the Ohio River; on the east by the Ohio River; and on the south and west by undeveloped land. The site is surrounded by a chain-link and razor-wire fence (Photograph No. 1).

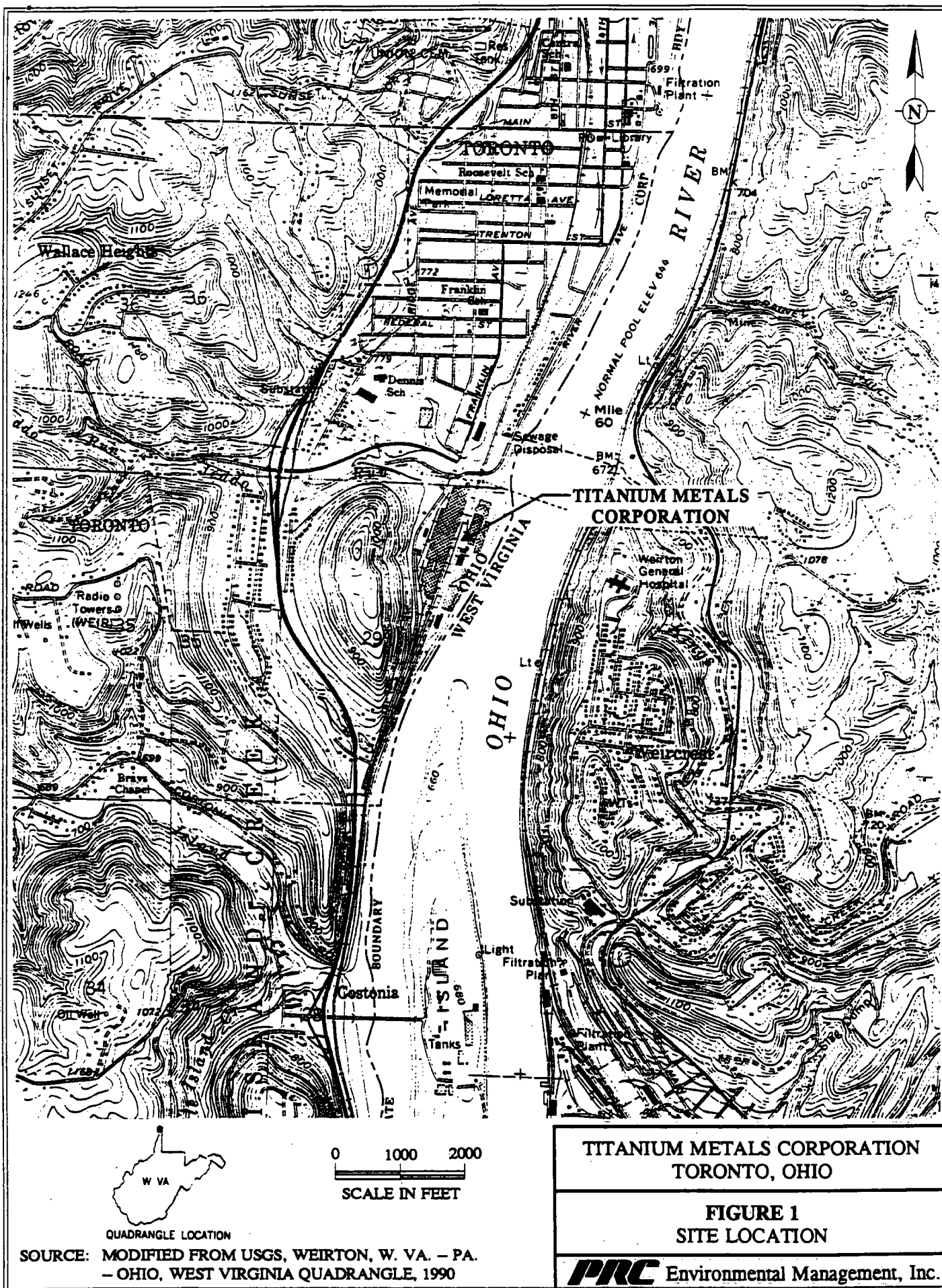


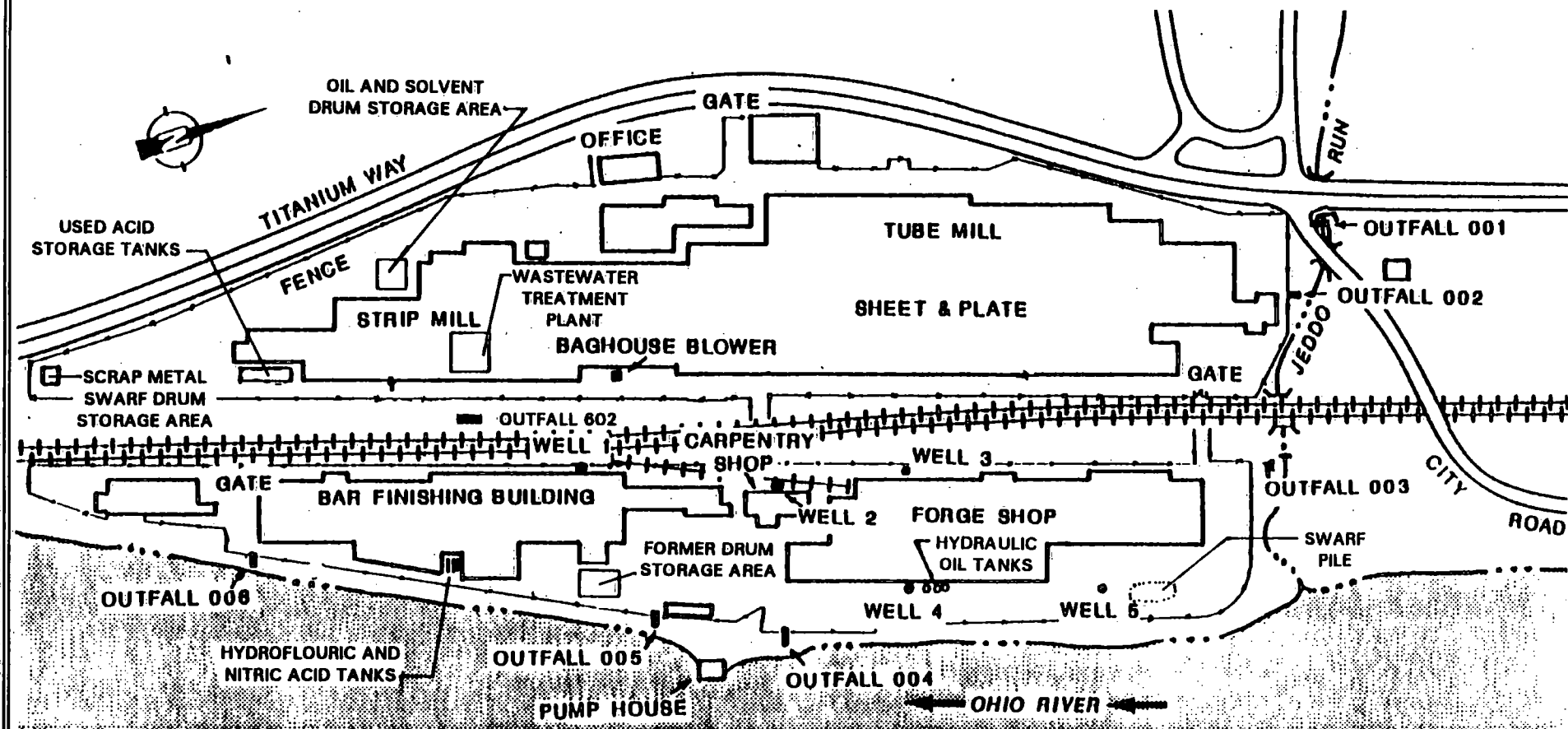
Security guards are present at the site 24 hours per day (PRC 1995). Figure 1 shows the site location, and Figure 2 shows the layout of the site.

Timet produces titanium metal for use in corrosive chemical processing and in the manufacture of commercial and military aircraft parts. As part of Timet's industrial operations, titanium ingots are heated and pressed into sheets. The sheets are shotblasted and sandblasted before being immersed in pickling baths; 5 percent or less of the pickling solution consists of hydrofluoric or nitric acid. The processed titanium is then ground to meet customer specifications. The product is then rolled or pressed into tubes for shipment off site.

The primary waste streams generated at Timet are waste lubricating oils, grinding swarf (titanium grinding residue), scrap metal, waste nonchlorinated cleaning agent (kerosene), baghouse dust, and spent pickling acid. The waste lubricating oils and grinding swarf are generated during production of various titanium mill products. The waste lubricating oils are collected, stored in an outdoor storage area, and disposed of at Clark Oil in Dayton, Ohio. The drum storage area is paved with asphalt, but has some areas of exposed soil (Photograph No. 2). Grinding swarf and media are stored in 55-gallon drums and open bins in the swarf and scrap metal drum storage area (Photograph No. 3). The grinding swarf is removed from the media for recycling, and the media are burned. During the site reconnaissance, PRC observed a large pile of oxidized swarf east of the forge shop next to the Ohio River (Photograph No. 4). Before 1993, the swarf was burned at an abandoned strip mine located about 12 miles north of the site (E&E 1990). Scrap titanium and other metals are stored in 55-gallon drums and wooden crates in the swarf and scrap metal drum storage area. Scrap titanium is shipped to Nevada, where it is melted down into ingots, or is sold to scrap dealers. The baghouse dust is stored in steel hoppers below each baghouse blower and is disposed of with general refuse at the Brook County Landfill, in Brook County, West Virginia.

Timet's pickling operations generate 900,000 to 1,200,000 gallons of spent pickling acid each year. The acid solution contains 5 percent or less hydrofluoric or nitric acid. The spent acid is recycled, stored in aboveground storage tanks, removed off site by tanker trucks, and sold as feedstock to CM Tech. A concrete pit provides secondary containment for the storage tanks (PRC 1993). OEPA has cited Timet for acid spills from the storage tanks to the Ohio River; the spills occurred on January 25,





**LEGEND:**

- SURFACE WATER
- x x x - FENCE

0 150 300  
SCALE IN FEET

**TITANIUM METALS CORPORATION  
TORONTO, OHIO**

**FIGURE 2  
SITE LAYOUT**

SOURCE: MODIFIED FROM ECOLOGY AND ENVIRONMENT, INC., 1990

**PRC** Environmental Management, Inc.

1981; April 8, 1982; April 22, 1982; March 30, 1983; and August 1, 1983 (E&E 1990). The most recent spill occurred on August 20, 1994, when 750 gallons of hydrofluoric acid was released from a tank at the site. Timet reports that 50 to 100 gallons of neutralized material resulting from this spill was released via an outfall to the Ohio River (PRC 1995).

From 1957 to 1985, Timet's maintenance department used chlorinated solvents (carbon tetrachloride and 1,1,1-trichloroethane [1,1,1-TCA]) as cleaning agents. The spent solvents were recycled or placed in 55-gallon drums in the oil and solvent storage area surrounded by a chain-link fence (Photograph No. 5). This storage area has no curbing or diking for containment; a plugged floor drain is located in the center of the unit (PRC 1993). Currently, this unit stores nonhazardous waste oils, kerosene, and lubricants. Kerosene is used as a cleaning agent at the site, waste kerosene is either recycled or removed by a licensed waste hauler.

Before June 1991, Timet generated a caustic kolene sludge during a caustic descaling process that is no longer used. This sludge was composed of potassium hydroxide, potassium nitrate, titanium oxides, and potassium carbonate. Before its off-site disposal, the sludge was stored in 55-gallon drums in the former drum storage area, which was located outdoors on the east portion of the site. A drain that leads to National Pollutant Discharge Elimination System (NPDES) outfall 005 is located near the former drum storage area (PRC 1993).

On February 16, 1981, Timet submitted a Resource Conservation and Recovery Act (RCRA) Part A permit application (PRC 1993). OEPA approved the permit application on December 29, 1981, and withdrew it on October 7, 1983, when Timet requested a change of status from that of a storage facility to that of a small-quantity generator (Timet 1983). Since the withdrawal of its RCRA Part A permit application in 1983, Timet has been operating as a less-than-90-day, large-quantity generator of hazardous waste (PRC 1993). Timet also holds air permits to operate an air contaminant source for its grinding, pickling, and descaling operations. The air contaminant source has scrubbers that are used to control their emissions (E&E 1990).

Timet has six outfalls that are covered under NPDES Permit No. OIE00010\*ED. Outfalls 001, 002, and 003 discharge process water into Jeddo Run Creek, which flows to the Ohio River. Outfalls 004, 005, and 006 discharge surface water runoff from the site directly to the Ohio River (E&E 1990).

Outfall 602 is an internal outfall that receives rinse waters from the descaler, pickle, and strip line, as well as fume scrubber discharge. These rinse waters are discharged to the wastewater treatment plant on site before they are discharged to the Ohio River through outfall 006 (PRC 1995).

Timet has a history of noncompliance with the final effluent limitations listed in its NPDES permit. On May 22 and 23, 1991, the OEPA Southeast District Office conducted an NPDES compliance sampling inspection at Timet. During the inspection, OEPA noted that Timet had violated the effluent limitations listed in its NPDES permit for mercury, fluoride, titanium, cyanide, lead, and zinc at outfall 003; and for titanium, pH, cyanide, fluoride, suspended solids, copper, mercury, and oil and grease at outfall 006. OEPA also noted that effluent from outfall 001 had caused discoloration of a stream bed in Jeddo Run Creek (OEPA 1991a). On September 6, 1991, OEPA ordered Timet to comply with the final effluent limitations of its NPDES permit (OEPA 1991b). In response to the order, Timet (1) constructed a wastewater treatment plant to handle wastewater from the fume scrubber and the descale pickle line, as well as strip pickle rinse water; and (2) routed wastewater from the tube production process to the City of Toronto's publicly owned treatment works.

### **3.0 PREVIOUS INVESTIGATIONS**

On February 1, 1984, the OEPA Southeast District Office conducted a preliminary assessment at the site. OEPA noted that the uncontained spent acid storage tanks located next to the Ohio River were potentially hazardous because any spills from the tanks would flow directly into the river (OEPA 1984).

In November 1984, OEPA began conducting groundwater sampling at Timet's on-site drinking water and process water wells. Samples collected from these wells contained elevated concentrations of 1,1,1-TCA, which was above the maximum contaminant level [MCL], and 1,1-dichloroethane. A sample collected from well 5 in June 1988 contained trichloroethene (TCE), which exceeded this substance's MCL. By September 23, 1988, samples from the wells showed that concentrations of 1,1,1-TCA; 1,1-DCA; and TCE had dropped (OEPA 1988). Because no documentation is available on which on-site wells were used to supply drinking water for the site and on which wells were used as process wells, it is unknown whether Timet employees were exposed to concentrations of 1,1,1-TCA and TCE that exceeded health-based benchmarks. However, Timet believes that water from all the

wells on site was blended to supply drinking water (OEPA 1985). The analytical results for the OEPA samples are provided in Attachment A; no figure showing the sampling locations is available.

On December 13 and 14, 1988, Ecology & Environment, Inc. (E&E), conducted a screening site inspection (SSI) at the site; this investigation is documented in an April 27, 1990, report (E&E 1990). As part of the SSI, six soil samples, five surface water samples, eight sediment samples, and five groundwater samples were collected. A background soil sample (S1) was also collected in an undisturbed, wooded area about 600 feet north of the site. Composite soil sample S8 was collected from the two active drum storage areas. Soil sample S9 was collected in the southwestern corner of the site. Soil sample S10 was collected near the strip mill area, along the fence that separates the western portion of the site from the railroad right-of-way. Soil sample S11 was collected in the western portion of the site near the baghouse blower. Soil sample S12 was collected on the eastern portion of the site near the acid tanks located next to the bar finishing building. Analysis of the on-site soil samples revealed fluoranthene, pyrene, Aroclor 1254, and arsenic at elevated concentrations.

Sediment samples S2 through S7 were collected at outfalls 001 through 006, respectively. Sediment sample S13 was collected at the point where Jeddo Run Creek enters the Ohio River. Sediment sample S14 was collected from Jeddo Run Creek upstream of the site. No upstream sediment sample was collected from the Ohio River as part of the SSI. Analysis of these sediment samples documented elevated concentrations of cyanide.

Of the five surface water samples, two (SW1 and SW2) were collected at outfalls 001 and 003, respectively, which discharge into Jeddo Run Creek; one (SW4) was collected from Jeddo Run Creek upstream of the site; one (SW5) was collected from Jeddo Run Creek downstream of the site; and one (SW3) was collected at outfall 006, which discharges to the Ohio River. No surface water sample was collected from the Ohio River upstream of the site during the SSI (E&E 1990). Sample SW1, which was collected at outfall 001, contained elevated concentrations of cyanide. Sample SW4, which was collected from Jeddo Run Creek upstream of the site contained no detectable levels of cyanide. A figure showing the sampling locations and the analytical results for the soil, surface water, and sediment samples are provided in Attachment B.

Of the five groundwater samples collected during the SSI, samples RW-1, RW-2, and RW-3 were collected from process wells located on site, and samples RW-4 and RW-5 were collected from residential wells located about 0.6 and 0.5 mile south of the site, respectively. No upgradient groundwater sample was collected during the SSI (E&E 1990). A figure showing the sampling locations and the analytical results for the groundwater samples are provided in Attachment C.

On May 22 and 23, 1991, the OEPA Southeast District Office conducted an NPDES compliance sampling inspection at Timet. During the inspection, OEPA noted that the facility had violated the effluent limitations listed in its NPDES permit for mercury, fluoride, titanium, cyanide, lead, and zinc at outfall 003; and for titanium, pH, cyanide, fluoride, suspended solids, copper, mercury, and oil and grease at outfall 006. OEPA also noted that effluent from outfall 001 had caused discoloration of a stream bed in Jeddo Run Creek (OEPA 1991a).

#### **4.0 MIGRATION AND EXPOSURE PATHWAYS**

This section discusses the four migration and exposure pathways associated with the site. Section 4.1 discusses the groundwater migration pathway; Section 4.2 discusses the surface water migration pathway; Section 4.3 discusses the soil exposure pathway; and Section 4.4 discusses the air migration pathway.

##### **4.1 GROUNDWATER MIGRATION PATHWAY**

This section discusses geology and soils, groundwater releases, and targets associated with the groundwater migration pathway at the site.

###### **4.1.1 Geology and Soils**

The site is located in the unglaciated Allegheny Plateau region of east-central Ohio. This area has been extensively dissected by drainages that empty into the Ohio River (PRC 1993).

This area of Ohio contains Pennsylvanian period sedimentary rocks of the Allegheny, Conemaugh, and Monongahela Formations and the Dunkard Group of the Permian period. Shale, limestone, clay, and sandstone are the most common kinds of bedrock outcropping in Jefferson County (PRC 1993).

Soils in Jefferson County are well drained or moderately well drained, and much of the land in the county slopes very steeply. Slope and a severe hazard of erosion are major limitations on land use in the county. Site soils are classified as Urban Land-Chaview complex soils. These soils are deep and well drained and are found on stream terraces of old alluvium. Soil permeability is moderately high (2 to 6 inches per hour) (PRC 1993).

The site is underlain by alluvial silts, clays, and unconsolidated material composed of sand and gravel deposits originating from glacial outwash. These deposits range from 0 to 110 feet in thickness and occur in the Ohio River Valley. The sand and gravel deposits are considered to be a single aquifer. Area well logs indicate that the first water-bearing zone of sand and gravel occurs at about 40 feet below ground surface (bgs). The unconsolidated material overlies undifferentiated layers of sandstone interbedded with shale, limestone, and coal. Well logs indicate that some of the layers used as sources of drinking water in the area may be confined, whereas other units contain perched water. However, because the bedrock may be fractured, the layers of bedrock are assumed to be hydraulically connected. Also, well logs do not indicate that a confining layer exists between the unconsolidated deposits and bedrock. The depth of this water-bearing zone is about 49 feet bgs. Based on surface topography, the direction of groundwater flow in the area is believed to be to the east-southeast toward the Ohio River (E&E 1990).

#### **4.1.2 Groundwater Releases**

Based on analytical results for samples collected by OEPA between 1984 and 1988, 1,1,1-TCA and TCE have been released from the site to groundwater at concentrations that exceed health-based benchmarks and 1,1,-DCA has been released but not detected at concentrations exceeding health-based benchmarks. Although no background samples were collected as part of OEPA's sampling activities, these hazardous substances were being handled on site and thus appear to be attributable to the site. Furthermore, because 1,1,1-TCA; 1,1-DCA; and TCE are not naturally occurring substances, their background concentrations can be assumed to be zero.



#### **4.1.3 Targets**

The Cities of Toronto and Steubenville, Ohio, and Weirton, West Virginia, receive their water from the Ohio River. However, private wells serve a number of households located within a 4-mile radius of the site but beyond the cities' distribution lines. About 1,623 people receive water from residential wells within 4 miles of the site (Frost 1995). The depths of these wells and their screened intervals are unknown.

The nearest drinking water well is located on site but is no longer used as a drinking water source. The depth of the well and its screened interval is unknown. In 1984, chlorinated solvents were detected in the on-site drinking water and process water wells. In 1991, Timet switched to the city water supply as a source of potable drinking water for the facility. Currently, all the on-site wells are used as sources of process water (PRC 1995).

### **4.2 SURFACE WATER MIGRATION PATHWAY**

This section discusses the migration route, surface water releases, and targets associated with the surface water migration pathway at the site.

#### **4.2.1 Migration Route**

The nearest surface water bodies are Jeddo Run Creek and the Ohio River, which border the site on the north and east, respectively. Jeddo Run Creek is a small tributary of the Ohio River, and PRC assumed that Jeddo Run Creek has a flow rate of less than 10 cubic feet per second (cfs). PRC assumed that the Ohio River has a flow rate of 50,000 to 100,000 cfs. The Ohio River is used as a source of drinking water in the area, and two surface water intakes are located within 15 downstream miles of the site. NPDES-permitted outfalls discharge process water and surface water runoff from the facility into Jeddo Run Creek and the Ohio River.

#### **4.2.2 Surface Water Releases**

A release of cyanide to Jeddo Run Creek has been documented by analytical results for surface water samples collected during the 1988 SSI (E&E 1990). Moreover, OEPA has cited Timet for releases of nitric and hydrofluoric acid solution to the Ohio River and for noncompliance with final effluent limitations listed in the facility's NPDES permit (OEPA 1991b). According to OEPA, Timet has released unacceptable concentrations of mercury, fluoride, titanium, cyanide, lead, zinc, suspended solids, copper, and oil and grease to the Ohio River. However, no samples were collected from the Ohio River downstream of the site during the SSI to determine the extent of the contamination resulting from these releases.

#### **4.2.3 Targets**

Jeddo Run Creek is not used as a source of drinking water or for recreational activities. Surface water intakes for the Weirton municipal system are located about 1.5 miles downstream of the Timet site in the Ohio River. These intakes serve about 27,000 people in Weirton and the surrounding area (E&E 1988a). The Steubenville municipal surface water intakes are located about 3 miles downstream of the site on the Ohio River and serve about 46,000 people (E&E 1988b). Surface water intakes for the Toronto municipal system are located on the Ohio River upstream of the site (E&E 1990).

The Ohio River is used for recreational and commercial fishing within 15 downstream miles of the site (E&E 1990). Although exact fish harvest data could not be located, PRC estimates that between 1,000 and 10,000 pounds of fish is caught annually in the Ohio River within 15 miles downstream of the site.

Based on National Wetland Inventory (NWI) maps of the area, 0.25 mile of unconsolidated bottomland and forested wetland frontage exists along the surface water pathway (DOI 1987). No sensitive environments are located along the surface water pathway within 15 miles downstream of the site (E&E 1990).

#### **4.3**

#### **SOIL EXPOSURE PATHWAY**

The 1988 SSI documented surficial contamination on site. A background soil sample was collected in an undisturbed, wooded area about 600 feet north of the site to determine the nature of the soil in the area. Analysis of the on-site soil samples revealed fluoranthene, pyrene, Aroclor 1254, and arsenic at elevated concentrations (E&E 1990).

Timet currently employs about 350 people on site. The site is inaccessible to the public, as it is surrounded by a chain-link fence and patrolled by guards 24 hours per day (PRC 1995). The site is located in a residential area, but no residences, schools, or daycare facilities are located within 200 feet of the site. The nearest residence is located about 500 feet from the site. About 4,197 people live within 1 mile of the site (Frost 1995). Two schools are located within 1 mile of the site (USGS 1990). No terrestrial sensitive environments lie within 200 feet of the site (E&E 1990).

#### **4.4**

#### **AIR MIGRATION PATHWAY**

No release from the site to the air migration pathway has been documented. No air samples were collected as part of the 1988 SSI. During the SSI, air monitoring instruments used by E&E detected no contaminant levels above background concentrations. Timet holds air permits for an air contaminant source for its grinding, pickling, and descaling operations. Timet has no history of air permit compliance problems, and there have been no complaints from local residents about odors emanating from the site (E&E 1990).

About 30,238 people live within 4 miles of the site (Frost 1995). Timet currently employs about 350 people on site. No sensitive environments lies within 4 miles of the site.

### **5.0 SUMMARY**

A potential exists for migration of contaminants from the Timet site to the surface water pathway via the facility's NPDES-permitted outfalls. The outfalls discharge process water and surface water runoff from the facility into Jeddo Run Creek and the Ohio River. Surface water intakes for the Weirton and Steubenville municipal systems are respectively located about 1.5 and 3 miles downstream of the site

on the Ohio River. These systems serve about 73,000 people. No samples have been collected to assess potential contamination of drinking water supplies, fisheries, or sensitive environments within 15 miles downstream of the site.

On-site surface soil contamination has been documented. Semivolatile organic compounds and metals have been detected in surface soil samples at concentrations above background levels. Furthermore, OEPA has documented the presence of solvents at concentrations exceeding health-based benchmarks in groundwater samples collected from on-site process water wells, which formerly supplied about 350 employees with drinking water. About 1,623 people receive drinking water from residential wells within 4 miles of the site.

The site is inaccessible to the public, as it is surrounded by a chain-link fence and patrolled by guards 24 hours per day. Timet employs about 350 people on site.

The potential does not exist for a release from the site to the air pathway. The facility holds air permits for its grinding, pickling, and descaling operations. The facility has no history of air permit compliance problems.

## REFERENCES

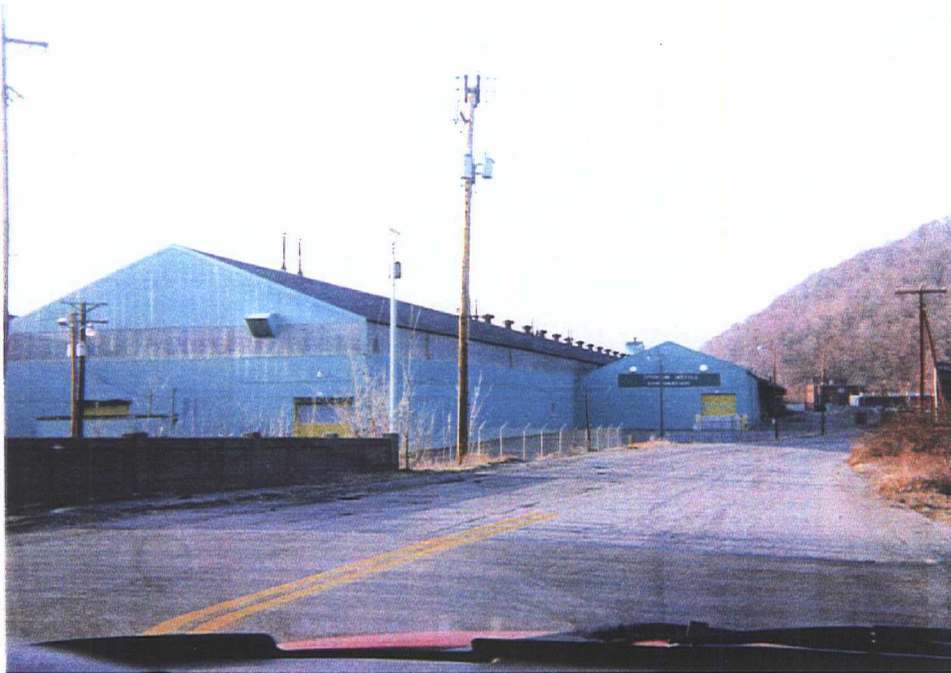
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- U.S. Geological Survey (USGS). 1990. 7.5-Minute Series Topographic Map of Weirton, W.VA-PA-Ohio Quadrangle.

**APPENDIX**

**SITE RECONNAISSANCE PHOTOGRAPHS**

**TITANIUM METALS CORPORATION  
TORONTO, OHIO**

**(Three Pages)**



Photograph No. 1

Location: Titanium Metals Corporation (Timet)

Orientation: South

Date: 03/03/95

Description: View of entrance to the facility; note chain-link fence around the facility



Photograph No. 2

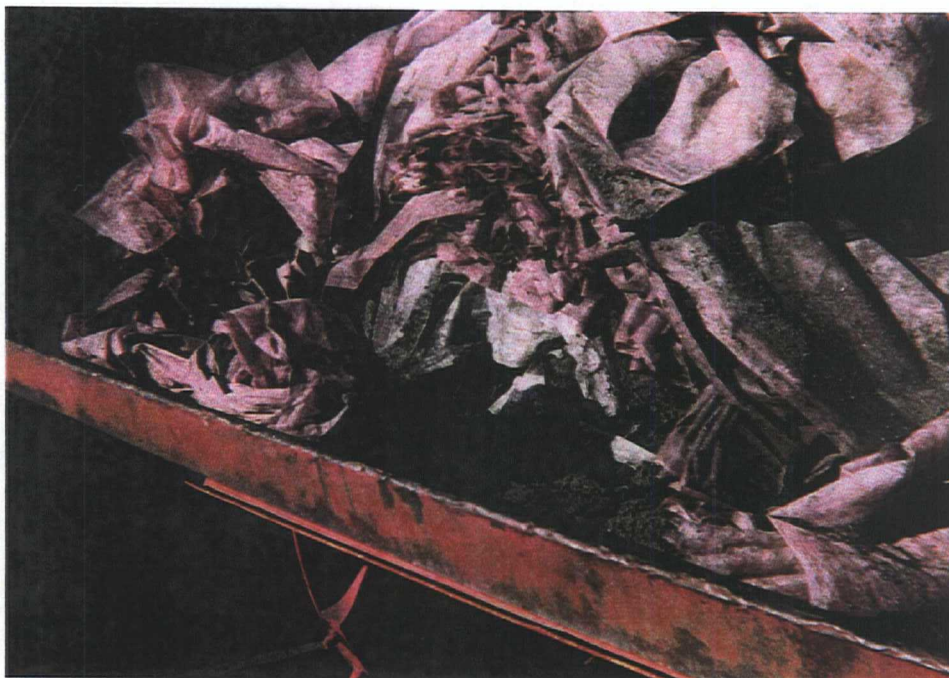
Location: Timet

Orientation: West

Date: 03/03/95

Description: View of outdoor drum storage area; note drums stored on pallets on exposed soil





Photograph No. 3

Orientation: West

Description: View of open bin containing swarf and media in outdoor drum storage area

Location: Timet

Date: 03/03/95



Photograph No. 4

Orientation: Northeast

Description: View of oxidized swarf pile; note that pile is stored on the ground surface

Location: Timet

Date: 03/03/95





Photograph No. 5

Orientation: Southeast

Description: View of the drum storage area; note the chain-link fence around the storage area

Location: Timet

Date: 03/03/95

**ATTACHMENT A**  
**GROUNDWATER ANALYTICAL RESULTS**  
**TITANIUM METALS CORPORATION**  
**TORONTO, OHIO**  
**(17 Sheets)**



[illegible][illegible]



Table 4-1  
RESULTS OF CHEMICAL ANALYSIS OF  
FII-COLLECTED SOIL/SEDIMENT SAMPLES

[illegible]

COMPOUND QUALITY

ANALYTE QUALITY

Indicates an estimated value.

DEFINITION

Spike recovers outside QC protocols, which indicates a possible matrix problem. Data may be biased high or low.

Value is real, but is above instrument DL and below CRDL.

Value is above CRDL and is an estimated value because of a QC protocol.

Post-digestion spike for furnace analysis is out of control limits (35-135), while sample absorbance is <50% of spike absorbance.

Source: Ecology and Environment, Inc. 1990

Compound value may be semiquantitative

INTERPRETATION

Value may be quantitative or semi-quantitative.

Value may be quantitative or semi-quantitative.

Value may be quantitative or semi-quantitative.

Value may be semi-quantitative.

Value may be semi-quantitative.

## Sample Collection Information

Sample Number  
S13  
S14

Sample Collection Information	
cadmium	5.340
calcium	20.2
chromium	15.4
cobalt	45.2
copper	55,000
iron	31.6
lead	2,330
magnesium	1,380
mercury	0.17
nickel	21.1
potassium	1,210
silver	0.42MB
selenium	29.5
sodium	926B
vanadium	0.74B
zinc	2092B
cytotoxic	31.9
Not detected	134
	0.72
	23.3
	122
	2051B

**ATTACHMENT B**

**SCREENING SITE INSPECTION  
SOIL, SURFACE WATER, AND SEDIMENT SAMPLING LOCATIONS  
AND ANALYTICAL RESULTS**

**TITANIUM METALS CORPORATION  
TORONTO, OHIO**

**(Eight Sheets)**



Timet  
Volatile Fraction  
Method Number: 524.2  
Date Received: September 23, 1988

ATEC Sample No.	16749	16750	16751	16752
Client Sample No.	Well	Well	Well	Well
	#2	#3	#4	#5
Analyst	REB	REB	REB	REB
1,1-Dichloroethene	3.9	6.3	< 0.5	< 0.5
1,1,1-Trichloroethane	95.0	105.0	< 0.5	2.4
Trichloroethene	< 0.5	1.7	< 0.5	< 0.5

All results reported as ug/l.

Timet  
Volatile Fraction  
Method Number: 524.2  
Date Received: September 23, 1988

ATEC Sample No.	16757	16758
Client Sample No.	Canteen	Main Office
Analyst	REB	REB

---

1,1-Dichloroethene	1.4	2.0
1,1,1-Trichloroethane	28.7	37.6
Trichloroethene	< 0.5	< 0.5

All results reported as ug/l.

Priority Pollutant Volatile Fraction  
Timet

ATEC Sample No.	10301	10302
Client Sample No.	#5	#6
Date Sampled	2/19/85	2/19/85
Acrolein	< 100	< 100
Acrylonitrile	< 100	< 100
○ Benzene	< 1.0	< 1.0
Bromoform	< 1.0	< 1.0
○ Carbon Tetrachloride	< 1.0	< 1.0
Chlorobenzene	< 1.0	< 1.0
Chlorodibromomethane	< 1.0	< 1.0
Chloroethane	< 10	< 10
2-Chloroethyl Vinyl Ether	< 1.0	< 1.0
Chloroform	< 1.0	< 1.0
Dichlorobromomethane	< 1.0	< 1.0
Dichlorodifluoromethane	< 1.0	< 1.0
1,1-Dichloroethane	< 1.0	< 1.0
1,2-Dichloroethane	< 1.0	< 1.0
1,1-Dichloroethene	< 1.0	< 1.0
1,2-Dichloropropane	< 1.0	< 1.0
cis-1,3-Dichloropropene	< 1.0	< 1.0
trans-1,3-Dichloropropene	< 1.0	< 1.0
Ethyl Benzene	< 1.0	< 1.0
Methyl Bromide	< 10	< 10
Methyl Chloride	< 10	< 10
Methylene Chloride	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	< 1.0	< 1.0
Tetrachloroethene	< 1.0	< 1.0
Toluene	< 1.0	< 1.0
trans-1,2-Dichloroethene	< 1.0	< 1.0
0,2 1,1,1-Trichloroethane	< 1.0	8.0
1,1,2-Trichloroethane	< 1.0	< 1.0
Trichloroethene	< 1.0	< 1.0
Trichlorofluoromethane	< 1.0	< 1.0
Vinyl Chloride	< 10	< 10

All concentrations express as ug/l.

Priority Pollutant Volatile Fraction  
Timet

ATC Sample No.	10298	10299	10300
Client Sample No.	#2	#3	#4
Date Sampled	1/19/85	1/19/85	1/19/85
Acrolein	< 100	< 100	< 100
Acrylonitrile	< 100	< 100	< 100
Benzene	< 1.0	< 1.0	< 1.0
Bromoform	< 1.0	< 1.0	< 1.0
Carbon Tetrachloride	< 1.0	< 1.0	< 1.0
Chlorobenzene	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	< 1.0	< 1.0	< 1.0
Chloroethane	< 10	< 10	< 10
2-Chloroethyl Vinyl Ether	< 1.0	< 1.0	< 1.0
Chloroform	< 1.0	< 1.0	< 1.0
Dichlorobromomethane	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	< 1.0	2.3	< 1.0
1,2-Dichloropropane	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	< 1.0	< 1.0	< 1.0
Ethyl Benzene	< 1.0	< 1.0	< 1.0
Methyl Bromide	< 10	< 10	< 10
Methyl Chloride	< 10	< 10	< 10
Methylene Chloride	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	< 1.0	< 1.0	< 1.0
Tetrachloroethene	< 1.0	< 1.0	< 1.0
Toluene	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	6.7	11.2	< 1.0
1,1,1-Trichloroethane	48.1	179	3.2
1,1,2-Trichloroethane	< 1.0	< 1.0	< 1.0
Trichloroethene	< 1.0	1.8	< 1.0
Trichlorofluoromethane	< 1.0	< 1.0	< 1.0
Vinyl Chloride	< 10	< 10	< 10

All concentrations express as ug/l.



Re: Jefferson County  
Timet  
Non-Community Water Supply

October 28, 1985

Timet  
100 Titanium Way  
P. O. Box 309  
Toronto, Ohio 43964

Attention: Ed Offord

Dear Sir:

On October 2, 1985, a meeting was held in your office with you, myself, and Mark Small, Titanium Metals Corporation. The purpose of the meeting was to review the recent Volatile Synthetic Organic Chemical (VOC) sample results from your water system and to discuss any necessary action.

Water continues to be supplied by five wells (No. 2, No. 3, No. 4, No. 5, No. 6). Wells No. 2 and No. 3 have previously shown significant amounts of VOC contamination. As reviewed during our meeting, the recent sample results showed the following:

ppb)	Engr. Office Tap	I-R Bldg. Tap	Extd. Mill Tap	Forge Shop Tap	Strip Mill Tap	Hot Mill Tap	Well # 2	Well # 3	Proposed MCL
111 Trichloroethane	49.8	34.3	32.2	31.8	11.0	<1.0	7.6	270	200
11 Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	19.3	7

Most of the water is used for process water rather than drinking water for the employees. However, it has been stated that due to internal plumbing, it is impractical to separate one or more of the wells for drinking water. It has also been stated that the industry cannot continue normal operations with well #2 or well #3 out of service.

Since none of the drinking water taps showed a violation of the proposed maximum contaminant level, Timet's proposal was to continue its' existing operating procedure with quarterly sampling of all five wells and five additional drinking water taps. Sampling would include 111 Trichloroethane, 11 Dichloroethene, and Trichloroethene. In addition, once a year each well would be sampled for all the VOC's. If the drinking water taps approach a proposed maximum contaminant level, then Timet would use bottled water for drinking and connect the showers to the city water system. After one year we would re-evaluate the situation to determine if the sampling frequencies should be reduced, increased, or eliminated.

Timet  
October 28, 1985  
Page 2

I have discussed this proposal with Dr. Applegate, our Water Quality Section Manager in Columbus. We are concerned about the use of drinking water wells with any VOC's present. We are particularly concerned when one of the wells is above a proposed VOC limit, even though the blended water presently appears to be below this limit. However, since the formal VOC limits have not yet been finalized and since you will be doing regular sampling, we will not object to your proposal at this time. In the future it may be required that all wells above the limit be disconnected from the drinking water system. Therefore we would recommend that you begin looking more closely at ways to eliminate well #3 from your drinking water system or at other more permanent solutions. We will expect your first quarterly sample results sometime in December and every three months thereafter.

If you have any questions, feel free to contact myself at 614-385-8501, or Dr. Applegate at 614-466-8307.

Sincerely,

*Steven C. Skinner*

Steven C. Skinner, P.E.  
Unit Supervisor  
Public Water Supply

SCS/ah

cc: DPWS/CO/Dr. Applegate  
cc: Marilyn McCoy Zumbro/DSHWM/SEDO  
cc: Mark Small, PhD.  
Timet  
P. O. Box 2128  
Henderson, Nevada 89015



Laboratory Services Division  
5350 Campbells Run Road  
Pittsburgh, PA 15205

REMIT TO:  
Park West Two  
Cliff Mine Road  
Pittsburgh, PA 15275

412-788-1080

## LAB ANALYSIS REPORT

CLIENT NAME: TIMET CORPORATION  
ADDRESS: P.O. BOX 309, 100 TITANIUM WAY  
TORONTO, OH 43964

REPORT DATE: 12/19/84

ATTENTION: MR. WAYNE COX

NUS CLIENT NO: 394601  
NUS SAMPLE NO: 14111173  
VENDOR NO: 02324802  
WORK ORDER NO: 55830  
DATE RECEIVED: 11/13/84

SAMPLE IDENTIFICATION: WELL #6

11/13

TEST	DETERMINATION	RESULTS	UNITS
1110	VOLATILES-PP IN WATER		
OV01	Acrolein	< 100	ug/l
IV02	Acrylonitrile	< 100	ug/l
OV03	Benzene	< 5	ug/l
IV05	Bromoform	< 10	ug/l
OV06	Carbon Tetrachloride	< 5	ug/l
IV07	Chlorobenzene	< 5	ug/l
OV08	Chlorodibromomethane	< 5	ug/l
IV09	Chloroethane	< 10	ug/l
OV10	2-Chloroethylvinyl Ether	< 10	ug/l
IV11	Chloroform	< 5	ug/l
OV12	Dichlorobromomethane	< 5	ug/l
IV14	1,1-Dichloroethane	< 5	ug/l
OV15	1,2-Dichloroethane	< 1	ug/l
IV16	1,1-Dichloroethylene	< 5	ug/l
OV17	1,2-Dichloropropane	< 10	ug/l
IV18	1,3-Dichloropropylene	< 5	ug/l
OV19	Ethylbenzene	< 5	ug/l
IV20	Methyl Bromide	< 10	ug/l
OV21	Methyl Chloride	< 10	ug/l
IV22	Methylene Chloride	< 5	ug/l
OV23	1,1,2,2-Tetrachloroethane	< 10	ug/l
IV24	Tetrachloroethylene(Perchloro)	< 5	ug/l
OV25	Toluene	< 5	ug/l
IV26	1,2-Trans-Dichloroethylene	< 5	ug/l
OV27	1,1,1-Trichloroethane	18	ug/l
IV28	1,1,2-Trichloroethane	< 5	ug/l
OV29	Trichloroethylene	< 5	ug/l
IV31	Vinyl chloride	< 10	ug/l

COMMENTS:

Reviewed and Approved by: JMC

GND



A Halliburton Company

CLIENT



**AQUA TECH  
ENVIRONMENTAL  
CONSULTANTS, INC.**

\*Address Reply to this Office.

P.O. BOX 76, STATE ROUTE 100, MELMORE, OHIO 44845, (419) 397-2222

P.O. BOX 436, 181 S. MAIN ST., MARION, OHIO 43302, (614) 382-5991

February 27, 1985

Mr. Ed Offord  
Timet  
100 Titanium Way  
Toronto, Ohio 43964

Dear Mr. Offord,

Attached are the results for the priority pollutant volatile scans of the well water samples collected February 19, 1985.

If you have any questions, please call me at (419) 397-2659.

Yours truly,

*Robert S. Glowacky*

Robert S. Glowacky  
Organic Section Chief  
and Principal Chemist

ks

Enclosure

c:





Laboratory Services Division  
5350 Campbells Run Road  
Pittsburgh, PA 15205

REMIT TO:  
Park West Two  
Cliff Mine Road  
Pittsburgh, PA 15275

412-788-1080

Σ. OFF JRS

## LAB ANALYSIS REPORT

CLIENT NAME: TIMET CORPORATION  
ADDRESS: P.O. BOX 309, 100 TITANIUM WAY  
TORONTO, OH 43964

REPORT DATE: 12/19/84

ATTENTION: MR. WAYNE COX

MUS CLIENT NO: 394601  
MUS SAMPLE NO: 14111169  
VENDOR NO: 02324802  
WORK ORDER NO: 55830  
DATE RECEIVED: 11/13/84

SAMPLE IDENTIFICATION: WELL #2

11/13

TEST	DETERMINATION	RESULTS	UNITS
0110	VOLATILES-PP IN WATER		
OV01	Acrolein	< 100	ug/l
OV02	Acrylonitrile	< 100	ug/l
OV03	Benzene	< 5	ug/l
OV05	Bromoform	< 10	ug/l
OV06	Carbon Tetrachloride	< 5	ug/l
OV07	Chlorobenzene	< 5	ug/l
OV08	Chlorodibromomethane	< 5	ug/l
OV09	Chloroethane	< 10	ug/l
OV10	2-Chloroethylvinyl Ether	< 10	ug/l
OV11	Chloroform	< 5	ug/l
OV12	Dichlorobromomethane	< 5	ug/l
OV14	1,1-Dichloroethane	6	ug/l
OV15	1,2-Dichloroethane	< 1	ug/l
OV16	1,1-Dichloroethylene	< 5	ug/l
OV17	1,2-Dichloropropane	< 10	ug/l
OV18	1,3-Dichloropropylene	< 5	ug/l
OV19	Ethylbenzene	< 5	ug/l
OV20	Methyl Bromide	< 10	ug/l
OV21	Methyl Chloride	< 10	ug/l
OV22	Methylene Chloride	< 5	ug/l
OV23	1,1,2,2-Tetrachloroethane	< 10	ug/l
OV24	Tetrachloroethylene(Perchloro)	< 5	ug/l
OV25	Toluene	< 5	ug/l
OV26	1,2-Trans-Dichloroethylene	< 5	ug/l
OV27	1,1,1-Trichloroethane	68	ug/l
OV28	1,1,2-Trichloroethane	< 5	ug/l
OV29	Trichloroethylene	< 5	ug/l
OV31	Vinyl chloride	< 10	ug/l

COMMENTS:

Reviewed and Approved by: JMC





Ref #3

Laboratory Services Division  
5350 Campbells Run Road  
Pittsburgh, PA 15205

REMIT TO:  
Park West Two  
Cliff Mine Road  
Pittsburgh, PA 15275

412-788-1080

## LAB ANALYSIS REPORT

CLIENT NAME: TIMET CORPORATION  
ADDRESS: P.O. BOX 309, 100 TITANIUM WAY  
TORONTO, OH 43964

REPORT DATE: 12/19/84

ATTENTION: MR. WAYNE COX

NUS CLIENT NO: 394601  
NUS SAMPLE NO: 14111170  
VENDOR NO: 02324802  
WORK ORDER NO: 55830  
DATE RECEIVED: 11/13/84

SAMPLE IDENTIFICATION: WELL #3

11/13

TEST	DETERMINATION	RESULTS	UNITS
0110	VOLATILES-PP IN WATER		
0V01	Acrolein	< 100	ug/l
0V02	Acrylonitrile	< 100	ug/l
0V03	Benzene	< 5	ug/l
0V05	Bromoform	< 10	ug/l
0V06	Carbon Tetrachloride	< 5	ug/l
0V07	Chlorobenzene	< 5	ug/l
0V08	Chlorodibromomethane	< 5	ug/l
0V09	Chloroethane	< 10	ug/l
0V10	2-Chloroethylvinyl Ether	< 10	ug/l
0V11	Chloroform	< 5	ug/l
0V12	Dichlorobromomethane	< 5	ug/l
0V14	1,1-Dichloroethane	8	ug/l
0V15	1,2-Dichloroethane	< 1	ug/l
0V16	1,1-Dichloroethylene	10	ug/l
0V17	1,2-Dichloropropane	< 10	ug/l
0V18	1,3-Dichloropropylene	< 5	ug/l
0V19	Ethylbenzene	< 5	ug/l
0V20	Methyl Bromide	< 10	ug/l
0V21	Methyl Chloride	< 10	ug/l
0V22	Methylene Chloride	< 5	ug/l
0V23	1,1,2,2-Tetrachloroethane	< 10	ug/l
0V24	Tetrachloroethylene(Perchloro)	< 5	ug/l
0V25	Toluene	< 5	ug/l
0V26	1,2-Trans-Dichloroethylene	< 5	ug/l
0V27	1,1,1-Trichloroethane	220	ug/l
0V28	1,1,2-Trichloroethane	< 5	ug/l
0V29	Trichloroethylene	< 5	ug/l
0V31	Vinyl chloride	< 10	ug/l

COMMENTS:

Reviewed and Approved by: JMC



Laboratory Services Division  
5350 Campbells Run Road  
Pittsburgh, PA 15205

REMIT TO:  
Park West Two  
Cliff Mine Road  
Pittsburgh, PA 15275

412-788-1080

## LAB ANALYSIS REPORT

CLIENT NAME: TIMET CORPORATION  
ADDRESS: P.O. BOX 309, 100 TITANIUM WAY  
TORONTO, OH 43964

REPORT DATE: 12/19/84

ATTENTION: MR. WAYNE COX

MUS CLIENT NO: 394601  
MUS SAMPLE NO: 14111171  
VENDOR NO: 02324802  
WORK ORDER NO: 55830  
DATE RECEIVED: 11/13/84

SAMPLE IDENTIFICATION: WELL #4

11/13

TEST	DETERMINATION	RESULTS	UNITS
B110	VOLATILES-PP IN WATER		
OV01	Acrolein	< 100	ug/l
IV02	Acrylonitrile	< 100	ug/l
OV03	Benzene	< 5	ug/l
IV05	Bromoform	< 10	ug/l
OV06	Carbon Tetrachloride	< 5	ug/l
IV07	Chlorobenzene	< 5	ug/l
OV08	Chlorodibromomethane	< 5	ug/l
IV09	Chloroethane	< 10	ug/l
OV10	2-Chloroethylvinyl Ether	< 10	ug/l
IV11	Chloroform	< 5	ug/l
OV12	Dichlorobromomethane	< 5	ug/l
IV14	1,1-Dichloroethane	< 5	ug/l
OV15	1,2-Dichloroethane	< 1	ug/l
IV16	1,1-Dichloroethylene	< 5	ug/l
OV17	1,2-Dichloropropane	< 10	ug/l
IV18	1,3-Dichloropropylene	< 5	ug/l
OV19	Ethylbenzene	< 5	ug/l
IV20	Methyl Bromide	< 10	ug/l
OV21	Methyl Chloride	< 10	ug/l
IV22	Methylene Chloride	< 5	ug/l
OV23	1,1,2,2-Tetrachloroethane	< 10	ug/l
IV24	Tetrachloroethylene(Perchloro)	< 5	ug/l
OV25	Toluene	< 5	ug/l
IV26	1,2-Trans-Dichloroethylene	< 5	ug/l
OV27	1,1,1-Trichloroethane	< 5	ug/l
IV28	1,1,2-Trichloroethane	< 5	ug/l
OV29	Trichloroethylene	< 5	ug/l
IV31	Vinyl chloride	< 10	ug/l

COMMENTS:

Reviewed and Approved by: JNC



A Halliburton Company

CLIENT



Laboratory Services Division  
5350 Campbells Run Road  
Pittsburgh, PA 15205

REMIT TO:  
Park West Two  
Cliff Mine Road  
Pittsburgh, PA 15275

412-788-1080

## LAB ANALYSIS REPORT

CLIENT NAME: TIMET CORPORATION  
ADDRESS: P.O. BOX 309, 100 TITANIUM WAY  
TORONTO, OH 43964

REPORT DATE: 12/19/84

ATTENTION: MR. WAYNE COX

NUS CLIENT NO: 394601  
NUS SAMPLE NO: 14111172  
VENDOR NO: 02324802  
WORK ORDER NO: 55830  
DATE RECEIVED: 11/13/84

SAMPLE IDENTIFICATION: WELL #5

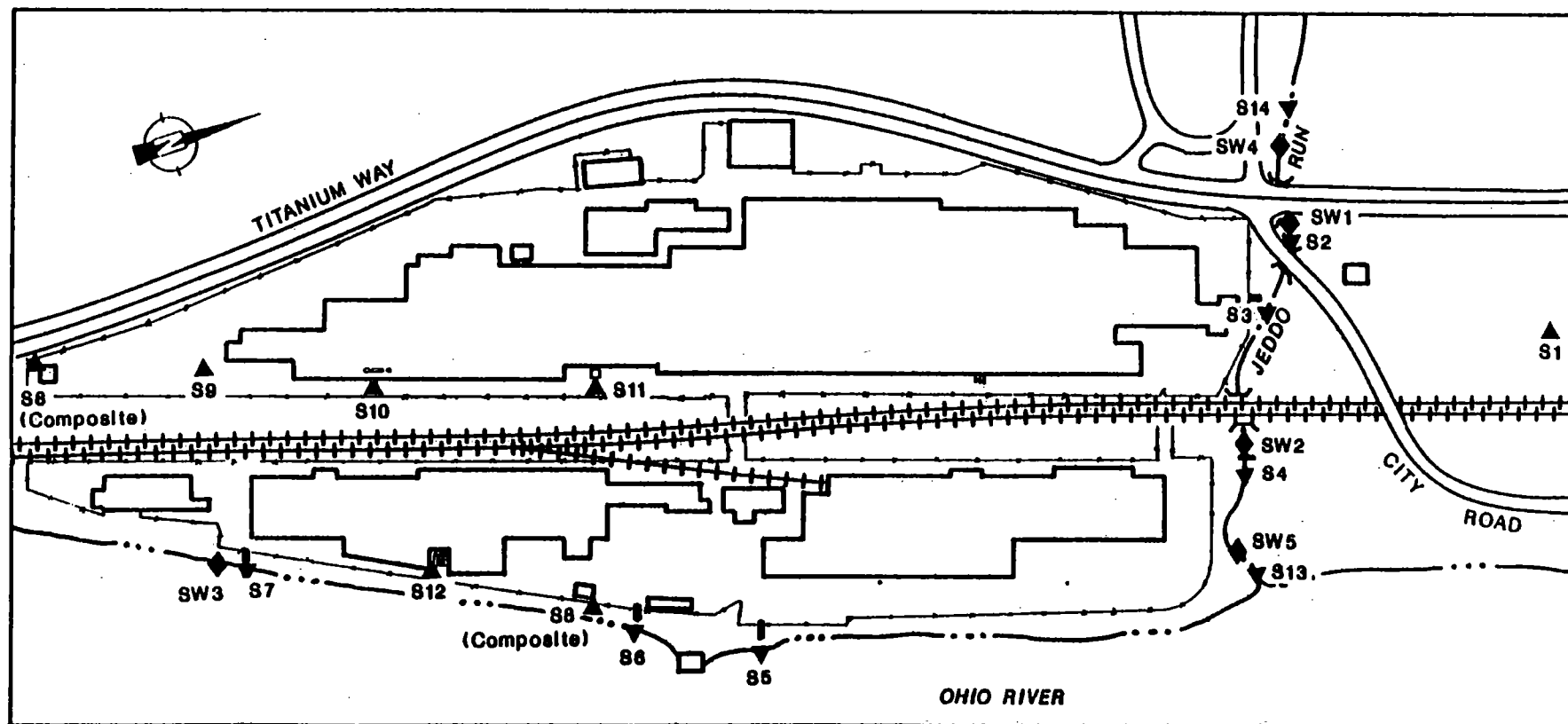
11/13

TEST	DETERMINATION	RESULTS	UNITS
1110	VOLATILES-PP IN WATER		
OV01	Acrolein	< 100	ug/l
IV02	Acrylonitrile	< 100	ug/l
OV03	Benzene	< 5	ug/l
IV05	Bromoform	< 10	ug/l
OV06	Carbon Tetrachloride	< 5	ug/l
IV07	Chlorobenzene	< 5	ug/l
OV08	Chlorodibromomethane	< 5	ug/l
IV09	Chloroethane	< 10	ug/l
OV10	2-Chloroethylvinyl Ether	< 10	ug/l
IV11	Chloroform	< 5	ug/l
OV12	Dichlorobromomethane	< 5	ug/l
IV14	1,1-Dichloroethane	< 5	ug/l
OV15	1,2-Dichloroethane	< 1	ug/l
IV16	1,1-Dichloroethylene	< 5	ug/l
OV17	1,2-Dichloropropane	< 10	ug/l
IV18	1,3-Dichloropropylene	< 5	ug/l
OV19	Ethylbenzene	< 5	ug/l
IV20	Methyl Bromide	< 10	ug/l
OV21	Methyl Chloride	< 10	ug/l
IV22	Methylene Chloride	< 5	ug/l
OV23	1,1,2,2-Tetrachloroethane	< 10	ug/l
IV24	Tetrachloroethylene(Perchloro)	< 5	ug/l
OV25	Toluene	< 5	ug/l
IV26	1,2-Trans-Dichloroethylene	< 5	ug/l
OV27	1,1,1-Trichloroethane	< 5	ug/l
IV28	1,1,2-Trichloroethane	< 5	ug/l
OV29	Trichloroethylene	< 5	ug/l
IV31	Vinyl chloride	< 10	ug/l

COMMENTS:

Reviewed and Approved by: JMC





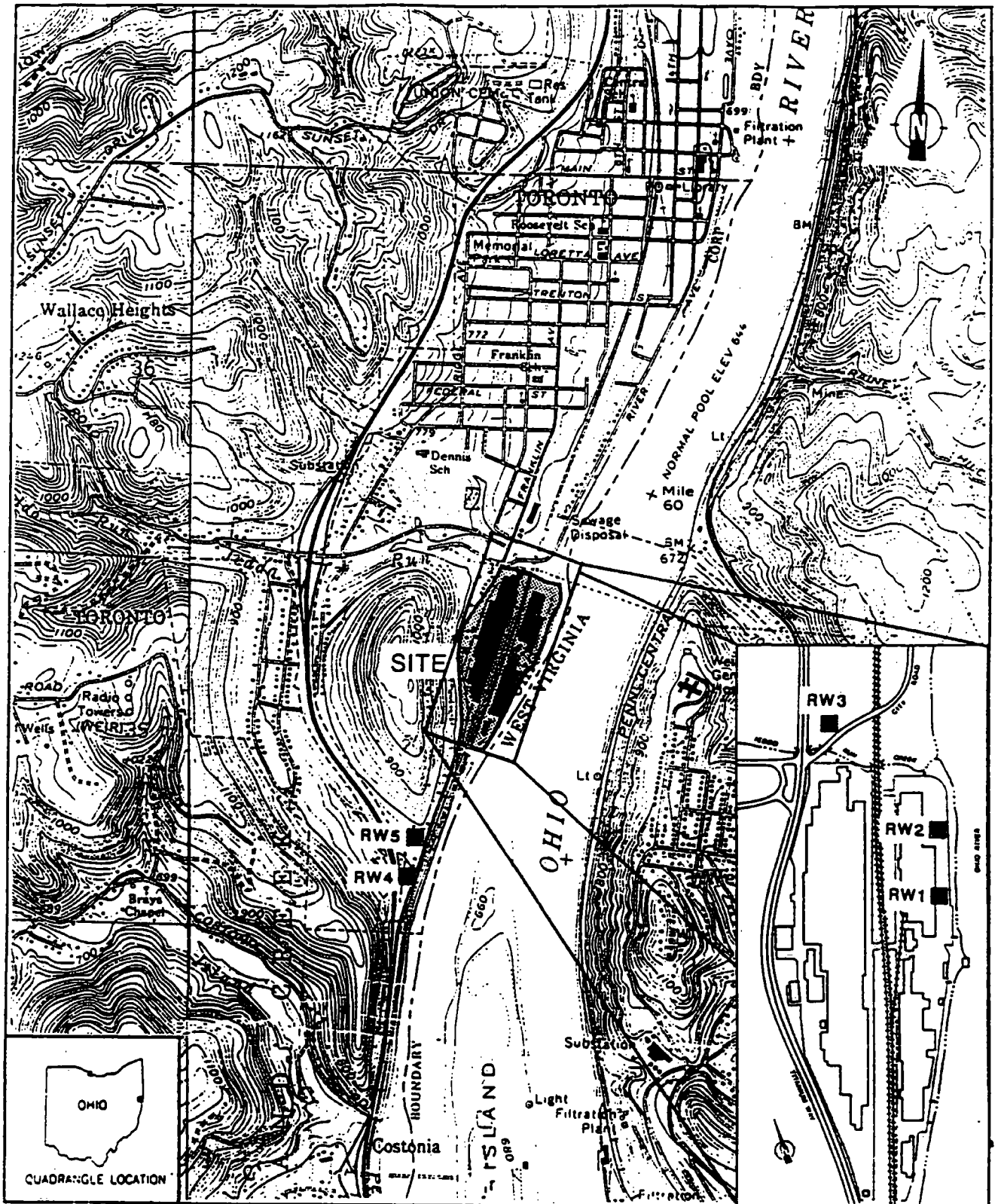
SOURCE: Ecology and Environment, Inc. 1990.

SCALE  
0 200 400 600 800 1,000 FEET

#### LEGEND

- ▲ SOIL SAMPLE
- ▼ SEDIMENT SAMPLE
- ◆ SURFACE WATER SAMPLE

FIGURE 3-2 SOIL/SEDIMENT AND SURFACE WATER SAMPLING LOCATIONS



SOURCE: Ecology and Environment, Inc. 1990; BASE MAPS: USGS, Knoxville, OH, WV Quadrangle, 7.5 Minute Series, 1968; Weirton WV, PA, OH Quadrangle, 7.5 Minute Series, 1968.

SCALE  
0 1/2 1 MILE

FIGURE 3-3 GROUNDWATER SAMPLING LOCATIONS



State of Ohio Environmental Protection Agency

**Southeast District Office**

2195 Front Street  
Logan, Ohio 43138-9031  
(614) 385-8501

NOV 10 REC'D

Richard F. Celeste  
Governor

November 7, 1988

RE: JEFFERSON COUNTY  
TIMET, INC.  
NON-TRANSIENT  
NON-COMMUNITY WATER SUPPLY  
I.D. 4136112

Ecology and Environment, Inc.  
111 W. Jackson Blvd.  
Chicago, Illinois 60604

Attn: Mr. Steve Skinner

Dear Mr. Skinner:

Enclosed are four (4) sets of VOC sample results for Timet, Inc. in Toronto, Ohio, as requested in our telephone conversation of November 3, 1988. Among these results are samples from three (3) separate years (1986-1988), as well as two (2) consecutive quarterly sample results from 1988 (including the most recent samples).

If you have any questions, or if you need any more information, please don't hesitate to call me at (614) 385-8501.

Sincerely,

Stephanie A. Mosher  
Environmental Scientist  
Public Drinking Water

SAM/c1

Enclosures

Timet  
Volatile Fraction  
Method Number: 601  
Date Received: 6/17/88

ATEC Sample No.	13939	13940	13941	13942
Client Sample No.	Well #2	Well #3	Well #4	Well #5
Analyst	LLR	LLR	LLR	LLR
Date Analyzed:	6/28/88	6/28/88	6/28/88	6/28/88
1,1-Dichloroethane	10.3	9.5	< 0.5	< 0.5
1,1,1-Trichloroethane	109	137	1.9	< 0.5
Trichloroethene	0.7	1.5	0.6	8.5

All results reported as ug/l.

Timet  
Volatile Fraction  
Method Number: 601  
Date Received: 6/17/88

ATEC Sample No.	13943	13944	13945	13946
Client Sample No.	Well #6	VEH SHOP	BAR FIN	NEW COND
Analyst	LLR	LLR	LLR	LLR
Date Analyzed:	6/28/89	6/28/89	6/28/89	6/28/89
1,1-Dichloroethane	< 0.5	1.8	29.6	< 0.5
1,1,1-Trichloroethane	5.8	3.6	29.0	5.6
Trichloroethene	1.3	0.9	3.5	0.6

All results reported as ug/l.

Timet  
Volatile Fraction  
Method Number: 601  
Date Received: 6/17/88

ATEC Sample No.	13947	13948	13949
Client Sample No.	ADM BLDG	LAB	BLK
Analyst	LLR	LLR	LLR
Date Analyzed:	6/29/88	6/29/88	6/28/89
1,1-Dichloroethane	< 0.5	< 0.5	< 0.5
1,1,1-Trichloroethane	5.3	4.8	< 0.5
Trichloroethene	2.8	3.4	< 0.5

All results reported as ug/l.



Timet  
Volatile Fraction  
Method Number: 524.2  
Date Received: September 23, 1988

ATEC Sample No.	16753	16754	16755	16756
Client Sample No.	Well	LAB	Forge	Tube
	#6		Restroom	Mills
Analyst	REB	REB	REB	REB

1,1-Dichloroethene	< 0.5	< 0.5	1.6	1.5
1,1,1-Trichloroethane	3.1	3.0	39.5	30.7
Trichloroethene	< 0.5	< 0.5	< 0.5	< 0.5

All results reported as ug/l.

# TIMET WATER ANALYSIS SUMMARY

SAMPLES COLLECTED 12/5/86

ANALYSES PROVIDED BY AQUA TECH

	<u>1, 1, 1 Trichloroethane</u>	<u>1,1, Dichloroethane</u>	<u>Trichloroethane</u>
Proposed MCL	200 ug/l	7 ug/l	5 ug/l
Main Office	23.3 ug/l	0.9 ug/l	<0.5 ug/l
Well #2	78.1 ug/l	1.7 ug/l	<0.5 ug/l
Well #3	90.7 ug/l	3.0 ug/l	1.1 ug/l
Well #4	0.7 ug/l	<0.5 ug/l	<0.5 ug/l
Well #5	<0.5 ug/l	<0.5 ug/l	<0.5 ug/l
Well #6	4.7 ug/l	<0.5 ug/l	<0.5 ug/l
Forge Office	3.1 ug/l	<0.5 ug/l	<0.5 ug/l
W. Plt. Maint. Office	<0.5 ug/l	<0.5 ug/l	<0.5 ug/l
Forge Wash Room	0.6 ug/l	<0.5 ug/l	<0.5 ug/l
Hot Mill	2.3 ug/l	<0.5 ug/l	<0.5 ug/l

TIMET VOC ANALYSIS SUMMARY  
 SAMPLES COLLECTED 6/11/87, REPORTED 6/17/87  
 ANALYZED BY AQUA TECH

Sample Location	1,1,1 Trichloroethane	1,1 Dichloroethane	Trichloroethane
Main Office	6.1 ug/l	<0.5 ug/l	<0.5 ug/l
Well #2	92.9 ug/l	3.3 ug/l	<0.5 ug/l
Well #3	119.0 ug/l	4.6 ug/l	1.4 ug/l
Well #4	2.7 ug/l	<0.5 ug/l	<0.5 ug/l
Well #5	<0.5 ug/l	<0.5 ug/l	<0.5 ug/l
Well #6	4.3 ug/l	<0.5 ug/l	<05. ug/l
Formans Locker Room	64.8 ug/l	1.6 ug/l	<05. ug/l
Strip & Tube Office	85.9 ug/l	<0.5 ug/l	<0.5 ug/l
Bar Finishing	17.0 ug/l	0.7 ug/l	<0.5 ug/l
Boiler House	<0.5 ug/l	<0.5 ug/l	<0.5 ug/l
Federal MCL	200 ug/l	7 ug/l	5 ug/l

**ATTACHMENT C**

**SCREENING SITE INSPECTION GROUNDWATER SAMPLING LOCATIONS  
AND ANALYTICAL RESULTS**

**TITANIUM METALS CORPORATION  
TORONTO, OHIO**

**(Three Sheets)**

Table 4-2  
RESULTS OF CHEMICAL ANALYSIS OF  
FIT-COLLECTED SURFACE WATER SAMPLES

Sample Collection Information and Parameters	Sample Number						
	SW1	SW2	SW3	Duplicate	SW4	SW5	Blank
Date	12/14/88	12/14/88	12/14/88	12/14/88	12/14/88	12/14/88	12/14/88
Time	0945	1015	1030	1030	0945	1015	0800
CLP Organic Traffic Report Number	ECW18	ECW19	ECW20	ECW23	ECW21	ECW22	ECW24
CLP Inorganic Traffic Report Number	MEBW29	MEBW30	MEBW31	MEBW34	MEBW32	MEBW33	MEBW35
Temperature (°C)	9	14	12	13	2	9	10
Specific Conductivity (µmhos/cm)	600	700	500	600	700	700	0
pH	7.30	8.04	7.19	7.15	7.54	7.70	7.06
<u>Compound Detected</u>							
(values in µg/L)							
<u>Volatile Organics</u>							
acetone	26	--	--	--	--	26	--
1,1-dichloroethane	--	--	3J	3J	--	3J	--
chloroform	--	--	--	--	--	--	6
1,1,1-trichloroethane	--	10	14	14	--	--	--
tetrachloroethene	--	--	--	--	--	--	7
<u>Analyte Detected</u>							
(values in µg/L)							
aluminum	402	184JB	125JB	118JB	313	502	27.5JB
arsenic	--	1.0B	0.50B	--	--	0.40B	--
barium	26.2B	40.4B	40.4B	38.7B	37.9B	32.5B	--
beryllium	--	--	0.41B	0.31B	0.35B	0.41B	--
calcium	77,200	84,200	69,000	65,700	78,400	76,200	111B
chromium	--	--	7.5B	9.5B	--	--	--
cobalt	--	--	14.2B	17.3B	--	--	--
copper	74.6	32.6J	24.9JB	16.7JB	12.2JB	20.7JB	9.6JB
iron	952	388	434	369	573	430	--
lead	7.9	1.4JB	0.30JB	0.40JB	--	0.90JB	0.50B
magnesium	13,700	14,100	11,900	11,400	17,400	12,900	--

Table 4-2 (Cont.)

Sample Collection Information and Parameters	Sample Number						
	SW1	SW2	SW3	Duplicate	SW4	SW5	Blank
manganese	43.5	90.9	120	114	37.9	159	--
nickel	--	7.1B	5.3B	6.7B	--	--	--
potassium	2,270B	3,130B	4,080B	3,690B	2,190B	2,710B	--
selenium	0.90JB	1.1JB	0.30JB	0.30JB	0.60JB	0.50JB	--
sodium	38,700	44,500	33,200	31,600	64,200	36,800	642JB
vanadium	55	270	32.6B	38.6B	--	154	--
zinc	69.3	14.5JB	21.6J	29.5J	112	21.9J	4.6JB
cyanide	44.5	--	--	--	--	--	--

-- Not detected.

COMPOUND QUALIFIER	DEFINITION	INTERPRETATION
J	Indicates an estimated value.	Compound value may be semiquantitative.

ANALYTE QUALIFIERS	DEFINITION	INTERPRETATION
B	Value is real, but is above instrument DL and below CRDL.	Value may be quantitative or semi-quantitative.
J	Value is above CRDL and is an estimated value because of a QC protocol.	Value may be semiquantitative.

Source: Ecology and Environment, Inc. 1990.

**FOCUSED SITE INSPECTION PRIORITIZATION  
SITE EVALUATION REPORT**

**TITANIUM METALS CORPORATION  
100 TITANIUM WAY  
TORONTO, OHIO**

**EPA ID NO. OHD 098 435 134**

**Prepared for**

**U.S. ENVIRONMENTAL PROTECTION AGENCY  
Site Assessment Section  
77 West Jackson Boulevard  
Chicago, IL 60604**

Date Prepared	:	May 31, 1995
EPA Region	:	5
Contract No.	:	68-W8-0084
Work Assignment No.	:	35-5JZZ
PRC Project No.	:	030-0035106
Prepared by	:	PRC Environmental Management, Inc. (Christine Easterling)
PRC Project Manager	:	Christopher Scott
Telephone No.	:	312/856-8700
EPA Work Assignment Manager	:	Jeanne Griffin
Telephone No.	:	312/886-3007

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### Appendix

#### SITE RECONNAISSANCE PHOTOGRAPHS

### Attachment

- A GROUNDWATER ANALYTICAL RESULTS
- B SCREENING SITE INSPECTION SOIL, SURFACE WATER, AND SEDIMENT SAMPLING LOCATIONS AND ANALYTICAL RESULTS
- C SCREENING SITE INSPECTION GROUNDWATER SAMPLING LOCATIONS AND ANALYTICAL RESULTS



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**ENCLOSURE 1**

**FOCUSED SITE INSPECTION PRIORITIZATION  
SITE EVALUATION REPORT**

**TITANIUM METALS CORPORATION  
TORONTO, OHIO**

ENTERED

**PRC**

May 31, 1995

Ms. Jeanne Griffin  
U.S. Environmental Protection Agency  
Region 5  
77 West Jackson Boulevard  
Chicago, IL 60604

**Subject:       Titanium Metals Corporation  
                  Toronto, Ohio  
                  EPA ID No. OHD 098 435 134  
                  Focused Site Inspection Prioritization  
                  Contract No. 68-W8-0084, Work Assignment No. 35-5JZZ**

Dear Ms. Griffin:

PRC Environmental Management, Inc. (PRC), has prepared the site evaluation report (SER) for the above-referenced site (Enclosure 1). PRC reviewed available information, conducted a site reconnaissance, and prepared a preliminary Hazard Ranking System (HRS) score for the Titanium Metals Corporation (Timet) site. Based on PRC's findings, the preliminary HRS score for the site is greater than 28.50. Therefore, PRC recommends that an expanded site inspection be conducted at the Timet site. As part of the ESI, soil samples should be collected from all of the source areas on site. Also, further groundwater sampling should be conducted, including the collection of a background sample.

Photographs taken during the site reconnaissance are included in the appendix of the SER. The U.S. Environmental Protection Agency (EPA) recommendation form is included in Enclosure 2. The Timet site preliminary HRS score is documented in a transmittal memorandum and preliminary scoresheets in Enclosure 3.

If you have any questions, please call me at 312/856-8700.

Sincerely,



Christopher Scott  
Project Manager

Enclosures (3)

cc:     Thomas Short, EPA Project Officer (letter only)  
          Brigitte Manzke, EPA Contracting Officer (letter only)  
          Pete Thompson, OEPA Southeast District Office  
          Majid Chaudhry, PRC Program Manager (letter only)

## **1.0 INTRODUCTION**

Under Contract No. 68-W8-0084, Work Assignment No. 35-5JZZ, PRC Environmental Management, Inc. (PRC), has evaluated the Titanium Metals Corporation (Timet) site in Toronto, Jefferson County, Ohio, as a potential candidate for the National Priorities List and has prepared this site evaluation report. Using the Hazard Ranking System, PRC performed focused site inspection prioritization activities for the site to determine whether, or to what extent, the site poses a threat to human health and the environment. This report presents the results of PRC's evaluation and summarizes the site conditions and targets pertinent to the migration and exposure pathways associated with the site. PRC obtained information from U.S. Environmental Protection Agency (EPA) Region 5 files, Ohio Environmental Protection Agency (OEPA) files, U.S. Geological Survey (USGS) topographic maps, National Wetland Inventory (NWI) maps, and the site reconnaissance conducted by PRC on March 3, 1995.

This report has five sections, including this introduction. Section 2.0 describes the site and provides a brief site history. Section 3.0 provides information about previous investigations conducted at the site. Section 4.0 provides information about the four migration and exposure pathways (groundwater migration, surface water migration, soil exposure, and air migration) that can be scored. Section 5.0 summarizes conditions at the site. References used by PRC to prepare this report are listed at the end of the text. In addition, the appendix to this report contains photographs taken during the site reconnaissance.

## **2.0 SITE DESCRIPTION AND HISTORY**

The Timet site is an active titanium processing plant located at 100 Titanium Way in Toronto, Jefferson County, Ohio (latitude 40°26'49" N and longitude 80°36'28" W). In 1957, Timet purchased the site from the Ohio River Steel Company, which operated a steel mill on the property. The date when the Ohio River Steel Company began operations at the site is unknown.

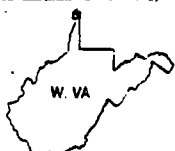
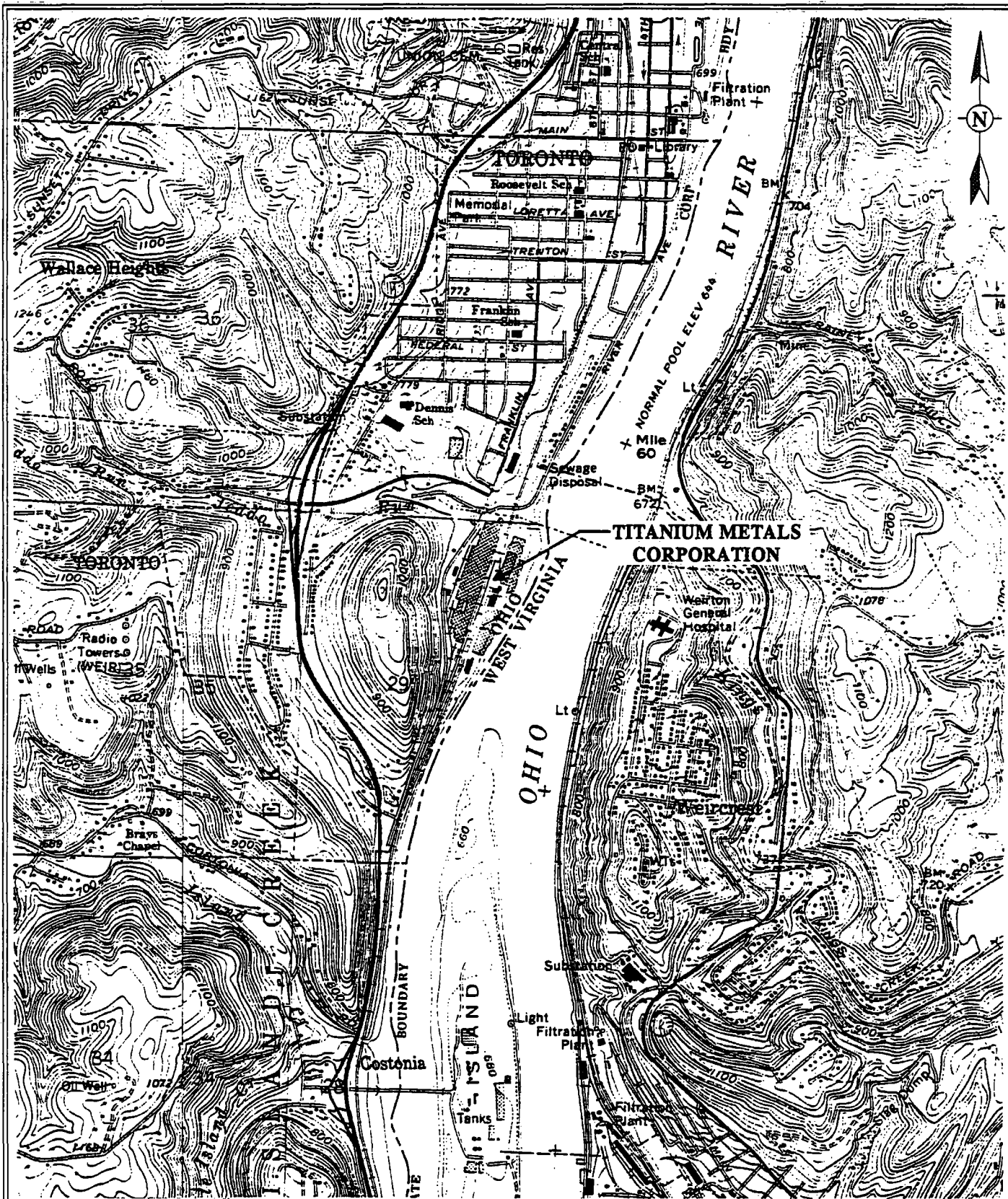
The Timet site covers about 51 acres in a residential area. The site is bordered on the north by Jeddo Run Creek, a tributary of the Ohio River; on the east by the Ohio River; and on the south and west by undeveloped land. The site is surrounded by a chain-link and razor-wire fence (Photograph No. 1).

Security guards are present at the site 24 hours per day (PRC 1995). Figure 1 shows the site location, and Figure 2 shows the layout of the site.

Timet produces titanium metal for use in corrosive chemical processing and in the manufacture of commercial and military aircraft parts. As part of Timet's industrial operations, titanium ingots are heated and pressed into sheets. The sheets are shotblasted and sandblasted before being immersed in pickling baths; 5 percent or less of the pickling solution consists of hydrofluoric or nitric acid. The processed titanium is then ground to meet customer specifications. The product is then rolled or pressed into tubes for shipment off site.

The primary waste streams generated at Timet are waste lubricating oils, grinding swarf (titanium grinding residue), scrap metal, waste nonchlorinated cleaning agent (kerosene), baghouse dust, and spent pickling acid. The waste lubricating oils and grinding swarf are generated during production of various titanium mill products. The waste lubricating oils are collected, stored in an outdoor storage area, and disposed of at Clark Oil in Dayton, Ohio. The drum storage area is paved with asphalt, but has some areas of exposed soil (Photograph No. 2). Grinding swarf and media are stored in 55-gallon drums and open bins in the swarf and scrap metal drum storage area (Photograph No. 3). The grinding swarf is removed from the media for recycling, and the media are burned. During the site reconnaissance, PRC observed a large pile of oxidized swarf east of the forge shop next to the Ohio River (Photograph No. 4). Before 1993, the swarf was burned at an abandoned strip mine located about 12 miles north of the site (E&E 1990). Scrap titanium and other metals are stored in 55-gallon drums and wooden crates in the swarf and scrap metal drum storage area. Scrap titanium is shipped to Nevada, where it is melted down into ingots, or is sold to scrap dealers. The baghouse dust is stored in steel hoppers below each baghouse blower and is disposed of with general refuse at the Brook County Landfill, in Brook County, West Virginia.

Timet's pickling operations generate 900,000 to 1,200,000 gallons of spent pickling acid each year. The acid solution contains 5 percent or less hydrofluoric or nitric acid. The spent acid is recycled, stored in aboveground storage tanks, removed off site by tanker trucks, and sold as feedstock to CM Tech. A concrete pit provides secondary containment for the storage tanks (PRC 1993). OEPA has cited Timet for acid spills from the storage tanks to the Ohio River; the spills occurred on January 25,



QUADRANGLE LOCATION

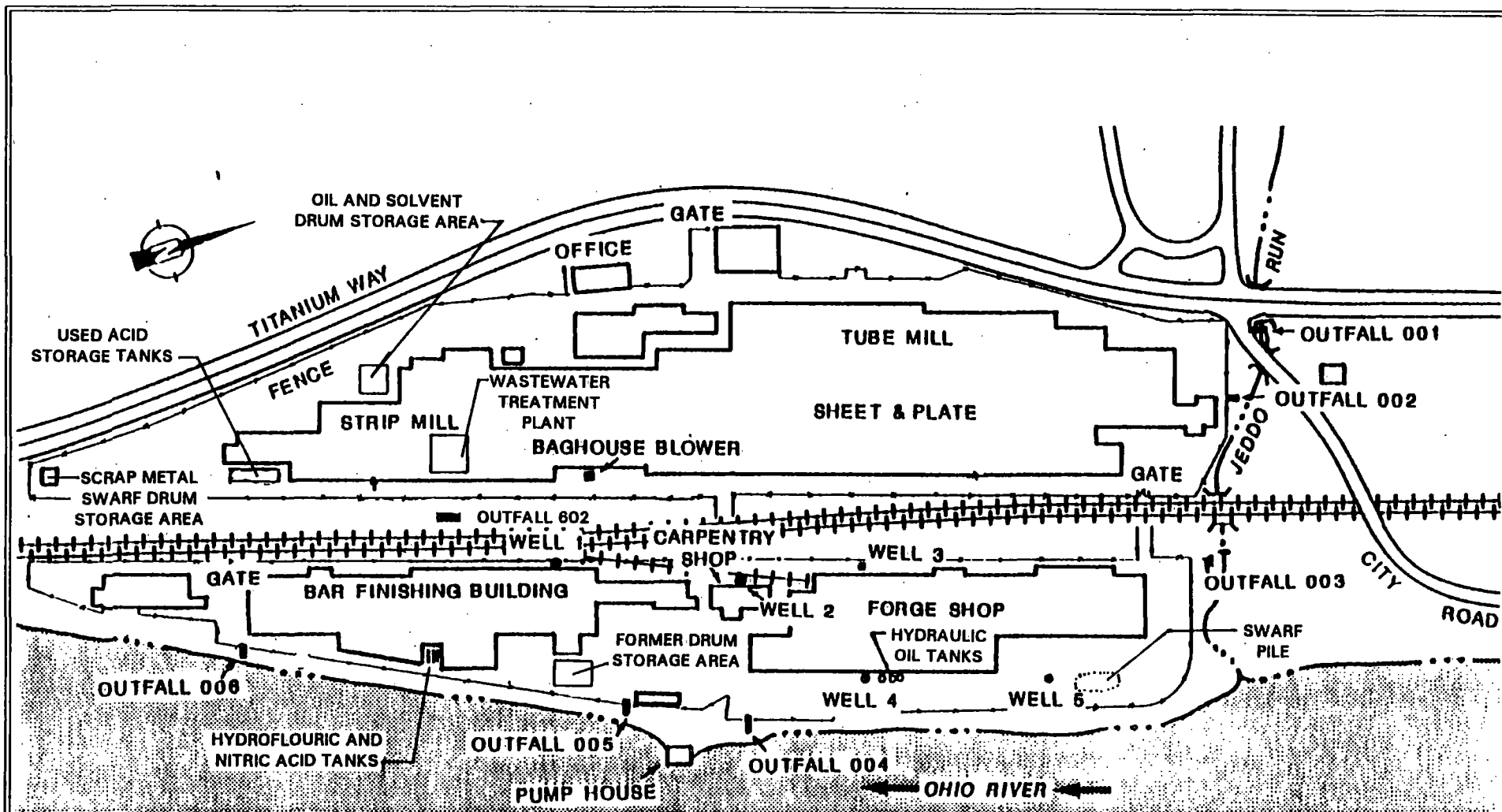
0 1000 2000  
SCALE IN FEET

SOURCE: MODIFIED FROM USGS, WEIRTON, W. VA. - PA.  
- OHIO, WEST VIRGINIA QUADRANGLE, 1990

**TITANIUM METALS CORPORATION  
TORONTO, OHIO**

**FIGURE 1  
SITE LOCATION**

**PRC** Environmental Management, Inc.



SOURCE: MODIFIED FROM ECOLOGY AND ENVIRONMENT, INC., 1990

1981; April 8, 1982; April 22, 1982; March 30, 1983; and August 1, 1983 (E&E 1990). The most recent spill occurred on August 20, 1994, when 750 gallons of hydrofluoric acid was released from a tank at the site. Timet reports that 50 to 100 gallons of neutralized material resulting from this spill was released via an outfall to the Ohio River (PRC 1995).

From 1957 to 1985, Timet's maintenance department used chlorinated solvents (carbon tetrachloride and 1,1,1-trichloroethane [1,1,1-TCA]) as cleaning agents. The spent solvents were recycled or placed in 55-gallon drums in the oil and solvent storage area surrounded by a chain-link fence (Photograph No. 5). This storage area has no curbing or diking for containment; a plugged floor drain is located in the center of the unit (PRC 1993). Currently, this unit stores nonhazardous waste oils, kerosene, and lubricants. Kerosene is used as a cleaning agent at the site, waste kerosene is either recycled or removed by a licensed waste hauler.

Before June 1991, Timet generated a caustic kolene sludge during a caustic descaling process that is no longer used. This sludge was composed of potassium hydroxide, potassium nitrate, titanium oxides, and potassium carbonate. Before its off-site disposal, the sludge was stored in 55-gallon drums in the former drum storage area, which was located outdoors on the east portion of the site. A drain that leads to National Pollutant Discharge Elimination System (NPDES) outfall 005 is located near the former drum storage area (PRC 1993).

On February 16, 1981, Timet submitted a Resource Conservation and Recovery Act (RCRA) Part A permit application (PRC 1993). OEPA approved the permit application on December 29, 1981, and withdrew it on October 7, 1983, when Timet requested a change of status from that of a storage facility to that of a small-quantity generator (Timet 1983). Since the withdrawal of its RCRA Part A permit application in 1983, Timet has been operating as a less-than-90-day, large-quantity generator of hazardous waste (PRC 1993). Timet also holds air permits to operate an air contaminant source for its grinding, pickling, and descaling operations. The air contaminant source has scrubbers that are used to control their emissions (E&E 1990).

Timet has six outfalls that are covered under NPDES Permit No. OIE00010\*ED. Outfalls 001, 002, and 003 discharge process water into Jeddo Run Creek, which flows to the Ohio River. Outfalls 004, 005, and 006 discharge surface water runoff from the site directly to the Ohio River (E&E 1990).



Outfall 602 is an internal outfall that receives rinse waters from the descaler, pickle, and strip line, as well as fume scrubber discharge. These rinse waters are discharged to the wastewater treatment plant on site before they are discharged to the Ohio River through outfall 006 (PRC 1995).

Timet has a history of noncompliance with the final effluent limitations listed in its NPDES permit. On May 22 and 23, 1991, the OEPA Southeast District Office conducted an NPDES compliance sampling inspection at Timet. During the inspection, OEPA noted that Timet had violated the effluent limitations listed in its NPDES permit for mercury, fluoride, titanium, cyanide, lead, and zinc at outfall 003; and for titanium, pH, cyanide, fluoride, suspended solids, copper, mercury, and oil and grease at outfall 006. OEPA also noted that effluent from outfall 001 had caused discoloration of a stream bed in Jeddo Run Creek (OEPA 1991a). On September 6, 1991, OEPA ordered Timet to comply with the final effluent limitations of its NPDES permit (OEPA 1991b). In response to the order, Timet (1) constructed a wastewater treatment plant to handle wastewater from the fume scrubber and the descale pickle line, as well as strip pickle rinse water; and (2) routed wastewater from the tube production process to the City of Toronto's publicly owned treatment works.

### **3.0 PREVIOUS INVESTIGATIONS**

On February 1, 1984, the OEPA Southeast District Office conducted a preliminary assessment at the site. OEPA noted that the uncontained spent acid storage tanks located next to the Ohio River were potentially hazardous because any spills from the tanks would flow directly into the river (OEPA 1984).

In November 1984, OEPA began conducting groundwater sampling at Timet's on-site drinking water and process water wells. Samples collected from these wells contained elevated concentrations of 1,1,1-TCA, which was above the maximum contaminant level [MCL], and 1,1-dichloroethane. A sample collected from well 5 in June 1988 contained trichloroethene (TCE), which exceeded this substance's MCL. By September 23, 1988, samples from the wells showed that concentrations of 1,1,1-TCA; 1,1-DCA; and TCE had dropped (OEPA 1988). Because no documentation is available on which on-site wells were used to supply drinking water for the site and on which wells were used as process wells, it is unknown whether Timet employees were exposed to concentrations of 1,1,1-TCA and TCE that exceeded health-based benchmarks. However, Timet believes that water from all the

wells on site was blended to supply drinking water (OEPA 1985). The analytical results for the OEPA samples are provided in Attachment A; no figure showing the sampling locations is available.

On December 13 and 14, 1988, Ecology & Environment, Inc. (E&E), conducted a screening site inspection (SSI) at the site; this investigation is documented in an April 27, 1990, report (E&E 1990). As part of the SSI, six soil samples, five surface water samples, eight sediment samples, and five groundwater samples were collected. A background soil sample (S1) was also collected in an undisturbed, wooded area about 600 feet north of the site. Composite soil sample S8 was collected from the two active drum storage areas. Soil sample S9 was collected in the southwestern corner of the site. Soil sample S10 was collected near the strip mill area, along the fence that separates the western portion of the site from the railroad right-of-way. Soil sample S11 was collected in the western portion of the site near the baghouse blower. Soil sample S12 was collected on the eastern portion of the site near the acid tanks located next to the bar finishing building. Analysis of the on-site soil samples revealed fluoranthene, pyrene, Aroclor 1254, and arsenic at elevated concentrations.

Sediment samples S2 through S7 were collected at outfalls 001 through 006, respectively. Sediment sample S13 was collected at the point where Jeddo Run Creek enters the Ohio River. Sediment sample S14 was collected from Jeddo Run Creek upstream of the site. No upstream sediment sample was collected from the Ohio River as part of the SSI. Analysis of these sediment samples documented elevated concentrations of cyanide.

Of the five surface water samples, two (SW1 and SW2) were collected at outfalls 001 and 003, respectively, which discharge into Jeddo Run Creek; one (SW4) was collected from Jeddo Run Creek upstream of the site; one (SW5) was collected from Jeddo Run Creek downstream of the site; and one (SW3) was collected at outfall 006, which discharges to the Ohio River. No surface water sample was collected from the Ohio River upstream of the site during the SSI (E&E 1990). Sample SW1, which was collected at outfall 001, contained elevated concentrations of cyanide. Sample SW4, which was collected from Jeddo Run Creek upstream of the site contained no detectable levels of cyanide. A figure showing the sampling locations and the analytical results for the soil, surface water, and sediment samples are provided in Attachment B.

Of the five groundwater samples collected during the SSI, samples RW-1, RW-2, and RW-3 were collected from process wells located on site, and samples RW-4 and RW-5 were collected from residential wells located about 0.6 and 0.5 mile south of the site, respectively. No upgradient groundwater sample was collected during the SSI (E&E 1990). A figure showing the sampling locations and the analytical results for the groundwater samples are provided in Attachment C.

On May 22 and 23, 1991, the OEPA Southeast District Office conducted an NPDES compliance sampling inspection at Timet. During the inspection, OEPA noted that the facility had violated the effluent limitations listed in its NPDES permit for mercury, fluoride, titanium, cyanide, lead, and zinc at outfall 003; and for titanium, pH, cyanide, fluoride, suspended solids, copper, mercury, and oil and grease at outfall 006. OEPA also noted that effluent from outfall 001 had caused discoloration of a stream bed in Jeddo Run Creek (OEPA 1991a).

#### **4.0 MIGRATION AND EXPOSURE PATHWAYS**

This section discusses the four migration and exposure pathways associated with the site. Section 4.1 discusses the groundwater migration pathway; Section 4.2 discusses the surface water migration pathway; Section 4.3 discusses the soil exposure pathway; and Section 4.4 discusses the air migration pathway.

##### **4.1 GROUNDWATER MIGRATION PATHWAY**

This section discusses geology and soils, groundwater releases, and targets associated with the groundwater migration pathway at the site.

###### **4.1.1 Geology and Soils**

The site is located in the unglaciated Allegheny Plateau region of east-central Ohio. This area has been extensively dissected by drainages that empty into the Ohio River (PRC 1993).

This area of Ohio contains Pennsylvanian period sedimentary rocks of the Allegheny, Conemaugh, and Monongahela Formations and the Dunkard Group of the Permian period. Shale, limestone, clay, and sandstone are the most common kinds of bedrock outcropping in Jefferson County (PRC 1993).

Soils in Jefferson County are well drained or moderately well drained, and much of the land in the county slopes very steeply. Slope and a severe hazard of erosion are major limitations on land use in the county. Site soils are classified as Urban Land-Chaview complex soils. These soils are deep and well drained and are found on stream terraces of old alluvium. Soil permeability is moderately high (2 to 6 inches per hour) (PRC 1993).

The site is underlain by alluvial silts, clays, and unconsolidated material composed of sand and gravel deposits originating from glacial outwash. These deposits range from 0 to 110 feet in thickness and occur in the Ohio River Valley. The sand and gravel deposits are considered to be a single aquifer. Area well logs indicate that the first water-bearing zone of sand and gravel occurs at about 40 feet below ground surface (bgs). The unconsolidated material overlies undifferentiated layers of sandstone interbedded with shale, limestone, and coal. Well logs indicate that some of the layers used as sources of drinking water in the area may be confined, whereas other units contain perched water. However, because the bedrock may be fractured, the layers of bedrock are assumed to be hydraulically connected. Also, well logs do not indicate that a confining layer exists between the unconsolidated deposits and bedrock. The depth of this water-bearing zone is about 49 feet bgs. Based on surface topography, the direction of groundwater flow in the area is believed to be to the east-southeast toward the Ohio River (E&E 1990).

#### **4.1.2 Groundwater Releases**

Based on analytical results for samples collected by OEPA between 1984 and 1988, 1,1,1-TCA and TCE have been released from the site to groundwater at concentrations that exceed health-based benchmarks and 1,1,-DCA has been released but not detected at concentrations exceeding health-based benchmarks. Although no background samples were collected as part of OEPA's sampling activities, these hazardous substances were being handled on site and thus appear to be attributable to the site. Furthermore, because 1,1,1-TCA; 1,1-DCA; and TCE are not naturally occurring substances, their background concentrations can be assumed to be zero.

#### **4.1.3 Targets**

The Cities of Toronto and Steubenville, Ohio, and Weirton, West Virginia, receive their water from the Ohio River. However, private wells serve a number of households located within a 4-mile radius of the site but beyond the cities' distribution lines. About 1,623 people receive water from residential wells within 4 miles of the site (Frost 1995). The depths of these wells and their screened intervals are unknown.

The nearest drinking water well is located on site but is no longer used as a drinking water source. The depth of the well and its screened interval is unknown. In 1984, chlorinated solvents were detected in the on-site drinking water and process water wells. In 1991, Timet switched to the city water supply as a source of potable drinking water for the facility. Currently, all the on-site wells are used as sources of process water (PRC 1995).

### **4.2 SURFACE WATER MIGRATION PATHWAY**

This section discusses the migration route, surface water releases, and targets associated with the surface water migration pathway at the site.

#### **4.2.1 Migration Route**

The nearest surface water bodies are Jeddo Run Creek and the Ohio River, which border the site on the north and east, respectively. Jeddo Run Creek is a small tributary of the Ohio River, and PRC assumed that Jeddo Run Creek has a flow rate of less than 10 cubic feet per second (cfs). PRC assumed that the Ohio River has a flow rate of 50,000 to 100,000 cfs. The Ohio River is used as a source of drinking water in the area, and two surface water intakes are located within 15 downstream miles of the site. NPDES-permitted outfalls discharge process water and surface water runoff from the facility into Jeddo Run Creek and the Ohio River.

#### **4.2.2 Surface Water Releases**

A release of cyanide to Jeddo Run Creek has been documented by analytical results for surface water samples collected during the 1988 SSI (E&E 1990). Moreover, OEPA has cited Timet for releases of nitric and hydrofluoric acid solution to the Ohio River and for noncompliance with final effluent limitations listed in the facility's NPDES permit (OEPA 1991b). According to OEPA, Timet has released unacceptable concentrations of mercury, fluoride, titanium, cyanide, lead, zinc, suspended solids, copper, and oil and grease to the Ohio River. However, no samples were collected from the Ohio River downstream of the site during the SSI to determine the extent of the contamination resulting from these releases.

#### **4.2.3 Targets**

Jeddo Run Creek is not used as a source of drinking water or for recreational activities. Surface water intakes for the Weirton municipal system are located about 1.5 miles downstream of the Timet site in the Ohio River. These intakes serve about 27,000 people in Weirton and the surrounding area (E&E 1988a). The Steubenville municipal surface water intakes are located about 3 miles downstream of the site on the Ohio River and serve about 46,000 people (E&E 1988b). Surface water intakes for the Toronto municipal system are located on the Ohio River upstream of the site (E&E 1990).

The Ohio River is used for recreational and commercial fishing within 15 downstream miles of the site (E&E 1990). Although exact fish harvest data could not be located, PRC estimates that between 1,000 and 10,000 pounds of fish is caught annually in the Ohio River within 15 miles downstream of the site.

Based on National Wetland Inventory (NWI) maps of the area, 0.25 mile of unconsolidated bottomland and forested wetland frontage exists along the surface water pathway (DOI 1987). No sensitive environments are located along the surface water pathway within 15 miles downstream of the site (E&E 1990).

### **4.3 SOIL EXPOSURE PATHWAY**

The 1988 SSI documented surficial contamination on site. A background soil sample was collected in an undisturbed, wooded area about 600 feet north of the site to determine the nature of the soil in the area. Analysis of the on-site soil samples revealed fluoranthene, pyrene, Aroclor 1254, and arsenic at elevated concentrations (E&E 1990).

Timet currently employs about 350 people on site. The site is inaccessible to the public, as it is surrounded by a chain-link fence and patrolled by guards 24 hours per day (PRC 1995). The site is located in a residential area, but no residences, schools, or daycare facilities are located within 200 feet of the site. The nearest residence is located about 500 feet from the site. About 4,197 people live within 1 mile of the site (Frost 1995). Two schools are located within 1 mile of the site (USGS 1990). No terrestrial sensitive environments lie within 200 feet of the site (E&E 1990).

### **4.4 AIR MIGRATION PATHWAY**

No release from the site to the air migration pathway has been documented. No air samples were collected as part of the 1988 SSI. During the SSI, air monitoring instruments used by E&E detected no contaminant levels above background concentrations. Timet holds air permits for an air contaminant source for its grinding, pickling, and descaling operations. Timet has no history of air permit compliance problems, and there have been no complaints from local residents about odors emanating from the site (E&E 1990).

About 30,238 people live within 4 miles of the site (Frost 1995). Timet currently employs about 350 people on site. No sensitive environments lie within 4 miles of the site.

## **5.0 SUMMARY**

A potential exists for migration of contaminants from the Timet site to the surface water pathway via the facility's NPDES-permitted outfalls. The outfalls discharge process water and surface water runoff from the facility into Jeddo Run Creek and the Ohio River. Surface water intakes for the Weirton and Steubenville municipal systems are respectively located about 1.5 and 3 miles downstream of the site

on the Ohio River. These systems serve about 73,000 people. No samples have been collected to assess potential contamination of drinking water supplies, fisheries, or sensitive environments within 15 miles downstream of the site.

On-site surface soil contamination has been documented. Semivolatile organic compounds and metals have been detected in surface soil samples at concentrations above background levels. Furthermore, OEPA has documented the presence of solvents at concentrations exceeding health-based benchmarks in groundwater samples collected from on-site process water wells, which formerly supplied about 350 employees with drinking water. About 1,623 people receive drinking water from residential wells within 4 miles of the site.

The site is inaccessible to the public, as it is surrounded by a chain-link fence and patrolled by guards 24 hours per day. Timet employs about 350 people on site.

The potential does not exist for a release from the site to the air pathway. The facility holds air permits for its grinding, pickling, and descaling operations. The facility has no history of air permit compliance problems.



## REFERENCES

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**APPENDIX**

**SITE RECONNAISSANCE PHOTOGRAPHS**

**TITANIUM METALS CORPORATION  
TORONTO, OHIO**

**(Three Pages)**



Photograph No. 1

Location: Titanium Metals Corporation (Timet)

Orientation: South

Date: 03/03/95

Description: View of entrance to the facility; note chain-link fence around the facility



Photograph No. 2

Location: Timet

Orientation: West

Date: 03/03/95

Description: View of outdoor drum storage area; note drums stored on pallets on exposed soil





Photograph No. 3

Orientation: West

Description: View of open bin containing swarf and media in outdoor drum storage area

Location: Timet

Date: 03/03/95



Photograph No. 4

Orientation: Northeast

Description: View of oxidized swarf pile; note that pile is stored on the ground surface

Location: Timet

Date: 03/03/95





Photograph No. 5

Orientation: Southeast

Description: View of the drum storage area; note the chain-link fence around the storage area

Location: Timet

Date: 03/03/95

**ATTACHMENT A**  
**GROUNDWATER ANALYTICAL RESULTS**  
**TITANIUM METALS CORPORATION**  
**TORONTO, OHIO**  
**(17 Sheets)**



Laboratory Services Division  
5350 Campbells Run Road  
Pittsburgh, PA 15205

REMIT TO:  
Park West Two  
Cliff Mine Road  
Pittsburgh, PA 15275

412-788-1080

Σ. OFF JRS

## LAB ANALYSIS REPORT

CLIENT NAME: TIMET CORPORATION  
ADDRESS: P.O. BOX 309, 100 TITANIUM WAY  
TORONTO, OH 43964

REPORT DATE: 12/19/84

ATTENTION: MR. WAYNE COX

MUS CLIENT NO: 394601  
MUS SAMPLE NO: 14111169  
VENDOR NO: 02324802  
WORK ORDER NO: 55830  
DATE RECEIVED: 11/13/84

SAMPLE IDENTIFICATION: WELL #2

11/13

TEST	DETERMINATION	RESULTS	UNITS
0110	VOLATILES-PP IN WATER		
DV01	Acrolein	< 100	ug/l
IV02	Acrylonitrile	< 100	ug/l
DV03	Benzene	< 5	ug/l
IV05	Bromoform	< 10	ug/l
DV06	Carbon Tetrachloride	< 5	ug/l
IV07	Chlorobenzene	< 5	ug/l
DV08	Chlorodibromomethane	< 5	ug/l
IV09	Chloroethane	< 10	ug/l
DV10	2-Chloroethylvinyl Ether	< 10	ug/l
IV11	Chloroform	< 5	ug/l
DV12	Dichlorobromomethane	< 5	ug/l
IV14	1,1-Dichloroethane	6	ug/l
DV15	1,2-Dichloroethane	< 1	ug/l
IV16	1,1-Dichloroethylene	< 5	ug/l
DV17	1,2-Dichloropropane	< 10	ug/l
IV18	1,3-Dichloropropylene	< 5	ug/l
DV19	Ethylbenzene	< 5	ug/l
IV20	Methyl Bromide	< 10	ug/l
DV21	Methyl Chloride	< 10	ug/l
IV22	Methylene Chloride	< 5	ug/l
DV23	1,1,2,2-Tetrachloroethane	< 10	ug/l
IV24	Tetrachloroethylene(Perchloro)	< 5	ug/l
DV25	Toluene	< 5	ug/l
IV26	1,2-Trans-Dichloroethylene	< 5	ug/l
DV27	1,1,1-Trichloroethane	68	ug/l
IV28	1,1,2-Trichloroethane	< 5	ug/l
DV29	Trichloroethylene	< 5	ug/l
IV31	Vinyl chloride	< 10	ug/l

COMMENTS:

Reviewed and Approved by: JMC



A Halliburton Company

CLIENT



Ref #3

Laboratory Services Division  
5350 Campbells Run Road  
Pittsburgh, PA 15205

REMIT TO:  
Park West Two  
Cliff Mine Road  
Pittsburgh, PA 15275

412-788-1080

## LAB ANALYSIS REPORT

CLIENT NAME: TIMET CORPORATION  
ADDRESS: P.O. BOX 309, 100 TITANIUM WAY  
TORONTO, OH 43964

REPORT DATE: 12/19/84

ATTENTION: MR. WAYNE COX

NUS CLIENT NO: 394601  
NUS SAMPLE NO: 14111170  
VENDOR NO: 02324802  
WORK ORDER NO: 55830  
DATE RECEIVED: 11/13/84

SAMPLE IDENTIFICATION: WELL #3

11/13

TEST	DETERMINATION	RESULTS	UNITS
0110	VOLATILES-PP IN WATER		
OV01	Acrolein	< 100	ug/l
IV02	Acrylonitrile	< 100	ug/l
OV03	Benzene	< 5	ug/l
IV05	Bromoform	< 10	ug/l
OV06	Carbon Tetrachloride	< 5	ug/l
IV07	Chlorobenzene	< 5	ug/l
OV08	Chlorodibromomethane	< 5	ug/l
IV09	Chloroethane	< 10	ug/l
OV10	2-Chloroethylvinyl Ether	< 10	ug/l
IV11	Chloroform	< 5	ug/l
OV12	Dichlorobromomethane	< 5	ug/l
IV14	1,1-Dichloroethane	8	ug/l
OV15	1,2-Dichloroethane	< 1	ug/l
IV16	1,1-Dichloroethylene	10	ug/l
OV17	1,2-Dichloropropane	< 10	ug/l
IV18	1,3-Dichloropropylene	< 5	ug/l
OV19	Ethylbenzene	< 5	ug/l
IV20	Methyl Bromide	< 10	ug/l
OV21	Methyl Chloride	< 10	ug/l
IV22	Methylene Chloride	< 5	ug/l
OV23	1,1,2,2-Tetrachloroethane	< 10	ug/l
IV24	Tetrachloroethylene(Perchloro)	< 5	ug/l
OV25	Toluene	< 5	ug/l
IV26	1,2-Trans-Dichloroethylene	< 5	ug/l
OV27	1,1,1-Trichloroethane	220	ug/l
IV28	1,1,2-Trichloroethane	< 5	ug/l
OV29	Trichloroethylene	< 5	ug/l
IV31	Vinyl chloride	< 10	ug/l

COMMENTS:

Reviewed and Approved by: JMC





Laboratory Services Division  
5350 Campbells Run Road  
Pittsburgh, PA 15205

REMIT TO:  
Park West Two  
Cliff Mine Road  
Pittsburgh, PA 15275

412-788-1080

## LAB ANALYSIS REPORT

CLIENT NAME: TIMET CORPORATION  
ADDRESS: P.O. BOX 309, 100 TITANIUM WAY  
TORONTO, OH 43964

REPORT DATE: 12/19/84

ATTENTION: MR. WAYNE COX

NUS CLIENT NO: 394601  
NUS SAMPLE NO: 14111171  
VENDOR NO: 02324802  
WORK ORDER NO: 55830  
DATE RECEIVED: 11/13/84

SAMPLE IDENTIFICATION: WELL #4

11/13

TEST	DETERMINATION	RESULTS	UNITS
1110	VOLATILES-PP IN WATER		
OV01	Acrolein	< 100	ug/l
IV02	Acrylonitrile	< 100	ug/l
OV03	Benzene	< 5	ug/l
IV05	Bromoform	< 10	ug/l
OV06	Carbon Tetrachloride	< 5	ug/l
IV07	Chlorobenzene	< 5	ug/l
OV08	Chlorodibromomethane	< 5	ug/l
IV09	Chloroethane	< 10	ug/l
OV10	2-Chloroethylvinyl Ether	< 10	ug/l
IV11	Chloroform	< 5	ug/l
OV12	Dichlorobromomethane	< 5	ug/l
IV14	1,1-Dichloroethane	< 5	ug/l
OV15	1,2-Dichloroethane	< 1	ug/l
IV16	1,1-Dichloroethylene	< 5	ug/l
OV17	1,2-Dichloropropane	< 10	ug/l
IV18	1,3-Dichloropropylene	< 5	ug/l
OV19	Ethylbenzene	< 5	ug/l
IV20	Methyl Bromide	< 10	ug/l
OV21	Methyl Chloride	< 10	ug/l
IV22	Methylene Chloride	< 5	ug/l
OV23	1,1,2,2-Tetrachloroethane	< 10	ug/l
IV24	Tetrachloroethylene(Perchloro)	< 5	ug/l
OV25	Toluene	< 5	ug/l
IV26	1,2-Trans-Dichloroethylene	< 5	ug/l
OV27	1,1,1-Trichloroethane	< 5	ug/l
IV28	1,1,2-Trichloroethane	< 5	ug/l
OV29	Trichloroethylene	< 5	ug/l
IV31	Vinyl chloride	< 10	ug/l

COMMENTS:

Reviewed and Approved by: JMC



A Halliburton Company

CLIENT



Laboratory Services Division  
5350 Campbells Run Road  
Pittsburgh, PA 15205

REMIT TO:  
Park West Two  
Cliff Mine Road  
Pittsburgh, PA 15275

412-788-1080

## LAB ANALYSIS REPORT

CLIENT NAME: TIMET CORPORATION  
ADDRESS: P.O. BOX 309, 100 TITANIUM WAY  
TORONTO, OH 43964

REPORT DATE: 12/19/84

ATTENTION: MR. WAYNE COX

MUS CLIENT NO: 394601  
MUS SAMPLE NO: 14111172  
VENDOR NO: 02324802  
WORK ORDER NO: 55830  
DATE RECEIVED: 11/13/84

SAMPLE IDENTIFICATION: WELL #5

11/13

TEST	DETERMINATION	RESULTS	UNITS
1110	VOLATILES-PP IN WATER		
OV01	Acrolein	< 100	ug/l
IV02	Acrylonitrile	< 100	ug/l
OV03	Benzene	< 5	ug/l
IV05	Bromoform	< 10	ug/l
OV06	Carbon Tetrachloride	< 5	ug/l
IV07	Chlorobenzene	< 5	ug/l
OV08	Chlorodibromomethane	< 5	ug/l
IV09	Chloroethane	< 10	ug/l
OV10	2-Chloroethylvinyl Ether	< 10	ug/l
IV11	Chloroform	< 5	ug/l
OV12	Dichlorobromomethane	< 5	ug/l
IV14	1,1-Dichloroethane	< 5	ug/l
OV15	1,2-Dichloroethane	< 1	ug/l
IV16	1,1-Dichloroethylene	< 5	ug/l
OV17	1,2-Dichloropropane	< 10	ug/l
IV18	1,3-Dichloropropylene	< 5	ug/l
OV19	Ethylbenzene	< 5	ug/l
IV20	Methyl Bromide	< 10	ug/l
OV21	Methyl Chloride	< 10	ug/l
IV22	Methylene Chloride	< 5	ug/l
OV23	1,1,2,2-Tetrachloroethane	< 10	ug/l
IV24	Tetrachloroethylene(Perchloro)	< 5	ug/l
OV25	Toluene	< 5	ug/l
IV26	1,2-Trans-Dichloroethylene	< 5	ug/l
OV27	1,1,1-Trichloroethane	< 5	ug/l
IV28	1,1,2-Trichloroethane	< 5	ug/l
OV29	Trichloroethylene	< 5	ug/l
IV31	Vinyl chloride	< 10	ug/l

COMMENTS:

Reviewed and Approved by: JMC



Laboratory Services Division  
5350 Campbells Run Road  
Pittsburgh, PA 15205

REMIT TO:  
Park West Two  
Cliff Mine Road  
Pittsburgh, PA 15275

412-788-1080

## LAB ANALYSIS REPORT

CLIENT NAME: TIMET CORPORATION  
ADDRESS: P.O. BOX 309, 100 TITANIUM WAY  
TORONTO, OH 43964

REPORT DATE: 12/19/84

ATTENTION: MR. WAYNE COX

MUS CLIENT NO: 394601  
MUS SAMPLE NO: 14111173  
VENDOR NO: 02324802  
WORK ORDER NO: 55830  
DATE RECEIVED: 11/13/84

SAMPLE IDENTIFICATION: WELL #6

11/13

TEST	DETERMINATION	RESULTS	UNITS
1110	VOLATILES-PP IN WATER		
UV01	Acrolein	< 100	ug/l
UV02	Acrylonitrile	< 100	ug/l
UV03	Benzene	< 5	ug/l
UV05	Bromoform	< 10	ug/l
UV06	Carbon Tetrachloride	< 5	ug/l
UV07	Chlorobenzene	< 5	ug/l
UV08	Chlorodibromomethane	< 5	ug/l
UV09	Chloroethane	< 10	ug/l
UV10	2-Chloroethylvinyl Ether	< 10	ug/l
UV11	Chloroform	< 5	ug/l
UV12	Dichlorobromomethane	< 5	ug/l
UV14	1,1-Dichloroethane	< 5	ug/l
UV15	1,2-Dichloroethane	< 1	ug/l
UV16	1,1-Dichloroethylene	< 5	ug/l
UV17	1,2-Dichloropropane	< 10	ug/l
UV18	1,3-Dichloropropylene	< 5	ug/l
UV19	Ethylbenzene	< 5	ug/l
UV20	Methyl Bromide	< 10	ug/l
UV21	Methyl Chloride	< 10	ug/l
UV22	Methylene Chloride	< 5	ug/l
UV23	1,1,2,2-Tetrachloroethane	< 10	ug/l
UV24	Tetrachloroethylene(Perchloro)	< 5	ug/l
UV25	Toluene	< 5	ug/l
UV26	1,2-Trans-Dichloroethylene	< 5	ug/l
UV27	1,1,1-Trichloroethane	18	ug/l
UV28	1,1,2-Trichloroethane	< 5	ug/l
UV29	Trichloroethylene	< 5	ug/l
UV31	Vinyl chloride	< 10	ug/l

COMMENTS:

Reviewed and Approved by: JMC





**AQUA TECH  
ENVIRONMENTAL  
CONSULTANTS, INC.**

P.O. BOX 76, STATE ROUTE 100, MELMORE, OHIO 44845, (419) 397-2222

P.O. BOX 436, 181 S. MAIN ST., MARION, OHIO 43302, (614) 382-5991

\*Address Reply to this Office.

February 27, 1985

Mr. Ed Offord  
Timet  
100 Titanium Way  
Toronto, Ohio 43964

Dear Mr. Offord,

Attached are the results for the priority pollutant volatile scans of the well water samples collected February 19, 1985.

If you have any questions, please call me at (419) 397-2659.

Yours truly,

*Robert S. Glowacky*

Robert S. Glowacky  
Organic Section Chief  
and Principal Chemist

ks

Enclosure

c:

Priority Pollutant Volatile Fraction  
Timet

ATEC Sample No.	10298	10299	10300
Client Sample No.	#2	#3	#4
Date Sampled	1/19/85	1/19/85	1/19/85
Acrolein	< 100	< 100	< 100
Acrylonitrile	< 100	< 100	< 100
Benzene	< 1.0	< 1.0	< 1.0
Bromoform	< 1.0	< 1.0	< 1.0
Carbon Tetrachloride	< 1.0	< 1.0	< 1.0
Chlorobenzene	< 1.0	< 1.0	< 1.0
Chlorodibromomethane	< 1.0	< 1.0	< 1.0
Chloroethane	< 10	< 10	< 10
2-Chloroethyl Vinyl Ether	< 1.0	< 1.0	< 1.0
Chloroform	< 1.0	< 1.0	< 1.0
Dichlorobromomethane	< 1.0	< 1.0	< 1.0
Dichlorodifluoromethane	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	< 1.0	2.3	< 1.0
1,2-Dichloropropane	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene	< 1.0	< 1.0	< 1.0
Ethyl Benzene	< 1.0	< 1.0	< 1.0
Methyl Bromide	< 10	< 10	< 10
Methyl Chloride	< 10	< 10	< 10
Methylene Chloride	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	< 1.0	< 1.0	< 1.0
Tetrachloroethene	< 1.0	< 1.0	< 1.0
Toluene	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene	6.7	11.2	< 1.0
1,1,1-Trichloroethane	48.1	179	3.2
1,1,2-Trichloroethane	< 1.0	< 1.0	< 1.0
Trichloroethene	< 1.0	1.8	< 1.0
Trichlorofluoromethane	< 1.0	< 1.0	< 1.0
Vinyl Chloride	< 10	< 10	< 10

All concentrations express as ug/l.

Priority Pollutant Volatile Fraction  
Timet

ATEC Sample No. Client Sample No. Date Sampled	10301 #5 2/19/85	10302 #6 2/19/85
Acrolein	< 100	< 100
Acrylonitrile	< 100	< 100
○ Benzene	< 1.0	< 1.0
Bromoform	< 1.0	< 1.0
○ Carbon Tetrachloride	< 1.0	< 1.0
Chlorobenzene	< 1.0	< 1.0
Chlorodibromomethane	< 1.0	< 1.0
Chloroethane	< 10	< 10
2-Chloroethyl Vinyl Ether	< 1.0	< 1.0
Chloroform	< 1.0	< 1.0
Dichlorobromomethane	< 1.0	< 1.0
Dichlorodifluoromethane	< 1.0	< 1.0
1,1-Dichloroethane	< 1.0	< 1.0
1,2-Dichloroethane	< 1.0	< 1.0
1,1-Dichloroethene	< 1.0	< 1.0
1,2-Dichloropropane	< 1.0	< 1.0
cis-1,3-Dichloropropene	< 1.0	< 1.0
trans-1,3-Dichloropropene	< 1.0	< 1.0
Ethyl Benzene	< 1.0	< 1.0
Methyl Bromide	< 10	< 10
Methyl Chloride	< 10	< 10
Methylene Chloride	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	< 1.0	< 1.0
Tetrachloroethene	< 1.0	< 1.0
Toluene	< 1.0	< 1.0
trans-1,2-Dichloroethene	< 1.0	< 1.0
0,2 1,1,1-Trichloroethane	< 1.0	8.0
1,1,2-Trichloroethane	< 1.0	< 1.0
Trichloroethene	< 1.0	< 1.0
Trichlorofluoromethane	< 1.0	< 1.0
Vinyl Chloride	< 10	< 10

All concentrations express as ug/l.



Re: Jefferson County  
Timet  
Non-Community Water Supply

October 28, 1985

Timet  
100 Titanium Way  
P. O. Box 309  
Toronto, Ohio 43964

Attention: Ed Offord

Dear Sir:

On October 2, 1985, a meeting was held in your office with you, myself, and Mark Small, Titanium Metals Corporation. The purpose of the meeting was to review the recent Volatile Synthetic Organic Chemical (VOC) sample results from your water system and to discuss any necessary action.

Water continues to be supplied by five wells (No. 2, No. 3, No. 4, No. 5, No. 6). Wells No. 2 and No. 3 have previously shown significant amounts of VOC contamination. As reviewed during our meeting, the recent sample results showed the following:

	Engr. Office Tap	I-R Bldg. Tap	Extd. Mill Tap	Forge Shop Tap	Strip Mill Tap	Hot Mill Tap	Well # 2	Well # 3	Proposed MCL
ppb)									
111 Trichloroethane	49.8	34.3	32.2	31.8	11.0	<1.0	7.6	270	200
11 Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	19.3	7

Most of the water is used for process water rather than drinking water for the employees. However, it has been stated that due to internal plumbing, it is impractical to separate one or more of the wells for drinking water. It has also been stated that the industry cannot continue normal operations with well #2 or well #3 out of service.

Since none of the drinking water taps showed a violation of the proposed maximum contaminant level, Timet's proposal was to continue its' existing operating procedure with quarterly sampling of all five wells and five additional drinking water taps. Sampling would include 111 Trichloroethane, 11 Dichloroethene, and Trichloroethene. In addition, once a year each well would be sampled for all the VOC's. If the drinking water taps approach a proposed maximum contaminant level, then Timet would use bottled water for drinking and connect the showers to the city water system. After one year we would re-evaluate the situation to determine if the sampling frequencies should be reduced, increased, or eliminated.

Timet  
October 28, 1985  
Page 2

I have discussed this proposal with Dr. Applegate, our Water Quality Section Manager in Columbus. We are concerned about the use of drinking water wells with any VOC's present. We are particularly concerned when one of the wells is above a proposed VOC limit, even though the blended water presently appears to be below this limit. However, since the formal VOC limits have not yet been finalized and since you will be doing regular sampling, we will not object to your proposal at this time. In the future it may be required that all wells above the limit be disconnected from the drinking water system. Therefore we would recommend that you begin looking more closely at ways to eliminate well #3 from your drinking water system or at other more permanent solutions. We will expect your first quarterly sample results sometime in December and every three months thereafter.

If you have any questions, feel free to contact myself at 614-385-8501, or Dr. Applegate at 614-466-8307.

Sincerely,

*Steven C. Skinner*

Steven C. Skinner, P.E.  
Unit Supervisor  
Public Water Supply

SCS/ah

cc: DPWS/CO/Dr. Applegate  
cc: Marilyn McCoy Zumbro/DSHM/SEDO  
cc: Mark Small, PhD.  
Timet  
P. O. Box 2128  
Henderson, Nevada 89015





State of Ohio Environmental Protection Agency

**Southeast District Office**

2195 Front Street  
Logan, Ohio 43138-9031  
(614) 385-8501

NOV 10 REC'D

Richard F. Celeste  
Governor

November 7, 1988

RE: JEFFERSON COUNTY  
TIMET, INC.  
NON-TRANSIENT  
NON-COMMUNITY WATER SUPPLY  
I.D. 4136112

Ecology and Environment, Inc.  
111 W. Jackson Blvd.  
Chicago, Illinois 60604

Attn: Mr. Steve Skinner

Dear Mr. Skinner:

Enclosed are four (4) sets of VOC sample results for Timet, Inc. in Toronto, Ohio, as requested in our telephone conversation of November 3, 1988. Among these results are samples from three (3) separate years (1986-1988), as well as two (2) consecutive quarterly sample results from 1988 (including the most recent samples).

If you have any questions, or if you need any more information, please don't hesitate to call me at (614) 385-8501.

Sincerely,

Stephanie A. Mosher  
Environmental Scientist  
Public Drinking Water

SAM/ci

Enclosures

## TIMET WATER ANALYSIS SUMMARY

SAMPLES COLLECTED 12/5/86

ANALYSES PROVIDED BY AQUA TECH

	<u>1, 1, 1 Trichloroethane</u>	<u>1,1, Dichloroethane</u>	<u>Trichloroethane</u>
Proposed MCL	200 ug/l	7 ug/l	5 ug/l
Main Office	23.3 ug/l	0.9 ug/l	<0.5 ug/l
Well #2	78.1 ug/l	1.7 ug/l	<0.5 ug/l
Well #3	90.7 ug/l	3.0 ug/l	1.1 ug/l
Well #4	0.7 ug/l	<0.5 ug/l	<0.5 ug/l
Well #5	<0.5 ug/l	<0.5 ug/l	<0.5 ug/l
Well #6	4.7 ug/l	<0.5 ug/l	<0.5 ug/l
Forge Office	3.1 ug/l	<0.5 ug/l	<0.5 ug/l
W. Plt. Maint. Office	<0.5 ug/l	<0.5 ug/l	<0.5 ug/l
Forge Wash Room	0.6 ug/l	<0.5 ug/l	<0.5 ug/l
Hot Mill	2.3 ug/l	<0.5 ug/l	<0.5 ug/l

TIMET VOC ANALYSIS SUMMARY  
 SAMPLES COLLECTED 6/11/87, REPORTED 6/17/87  
 ANALYZED BY AQUA TECH

Sample Location	1,1,1 Trichloroethane	1,1 Dichloroethane	Trichloroethane
Main Office	6.1 ug/l	<0.5 ug/l	<0.5 ug/l
Well #2	92.9 ug/l	3.3 ug/l	<0.5 ug/l
Well #3	119.0 ug/l	4.6 ug/l	1.4 ug/l
Well #4	2.7 ug/l	<0.5 ug/l	<0.5 ug/l
Well #5	<0.5 ug/l	<0.5 ug/l	<0.5 ug/l
Well #6	4.3 ug/l	<0.5 ug/l	<05. ug/l
Formans Locker Room	64.8 ug/l	1.6 ug/l	<05. ug/l
Strip & Tube Office	85.9 ug/l	<0.5 ug/l	<0.5 ug/l
Bar Finishing	17.0 ug/l	0.7 ug/l	<0.5 ug/l
Boiler House	<0.5 ug/l	<0.5 ug/l	<0.5 ug/l
Federal MCL	200 ug/l	7 ug/l	5 ug/l

Timet  
Volatile Fraction  
Method Number: 601  
Date Received: 6/17/88

ATEC Sample No.	13939	13940	13941	13942
Client Sample No.	Well #2	Well #3	Well #4	Well #5
Analyst	LLR	LLR	LLR	LLR
Date Analyzed:	6/28/88	6/28/88	6/28/88	6/28/88

---

1,1-Dichloroethane	10.3	9.5	< 0.5	< 0.5
1,1,1-Trichloroethane	109	137	1.9	< 0.5
Trichloroethene	0.7	1.5	0.6	8.5

All results reported as ug/l.

Timet  
Volatile Fraction  
Method Number: 601  
Date Received: 6/17/88

ATEC Sample No.	13943	13944	13945	13946
Client Sample No.	Well #6	VEH SHOP	BAR FIN	NEW COND
Analyst	LLR	LLR	LLR	LLR
Date Analyzed:	6/28/89	6/28/89	6/28/89	6/28/89

---

1,1-Dichloroethane	< 0.5	1.8	29.6	< 0.5
1,1,1-Trichloroethane	5.8	3.6	29.0	5.6
Trichloroethene	1.3	0.9	3.5	0.6

All results reported as ug/l.

Timet  
Volatile Fraction  
Method Number: 601  
Date Received: 6/17/88

ATEC Sample No.	13947	13948	13949
Client Sample No.	ADM BLDG	LAB	BLK
Analyst	LLR	LLR	LLR
Date Analyzed:	6/29/88	6/29/88	6/28/89

---

1,1-Dichloroethane	< 0.5	< 0.5	< 0.5
1,1,1-Trichloroethane	5.3	4.8	< 0.5
Trichloroethene	2.8	3.4	< 0.5

All results reported as ug/l.

Timet  
Volatile Fraction  
Method Number: 524.2  
Date Received: September 23, 1988

ATEC Sample No.	16753	16754	16755	16756
Client Sample No.	Well	LAB	Forge	Tube
	#6		Restroom	Mills
Analyst	REB	REB	REB	REB
1,1-Dichloroethene	< 0.5	< 0.5	1.6	1.5
1,1,1-Trichloroethane	3.1	3.0	39.5	30.7
Trichloroethene	< 0.5	< 0.5	< 0.5	< 0.5

All results reported as ug/l.

Timet  
Volatile Fraction  
Method Number: 524.2  
Date Received: September 23, 1988

---

ATEC Sample No.	16749	16750	16751	16752
Client Sample No.	Well	Well	Well	Well
	#2	#3	#4	#5
Analyst	REB	REB	REB	REB

---

1,1-Dichloroethene	3.9	6.3	< 0.5	< 0.5
1,1,1-Trichloroethane	95.0	105.0	< 0.5	2.4
Trichloroethene	< 0.5	1.7	< 0.5	< 0.5

---

All results reported as ug/l.

Timet  
Volatile Fraction  
Method Number: 524.2  
Date Received: September 23, 1988

---

ATEC Sample No.	16757	16758
Client Sample No.	Canteen	Main Office
Analyst	REB	REB

---

1,1-Dichloroethene	1.4	2.0
1,1,1-Trichloroethane	28.7	37.6
Trichloroethene	< 0.5	< 0.5

---

All results reported as ug/l.

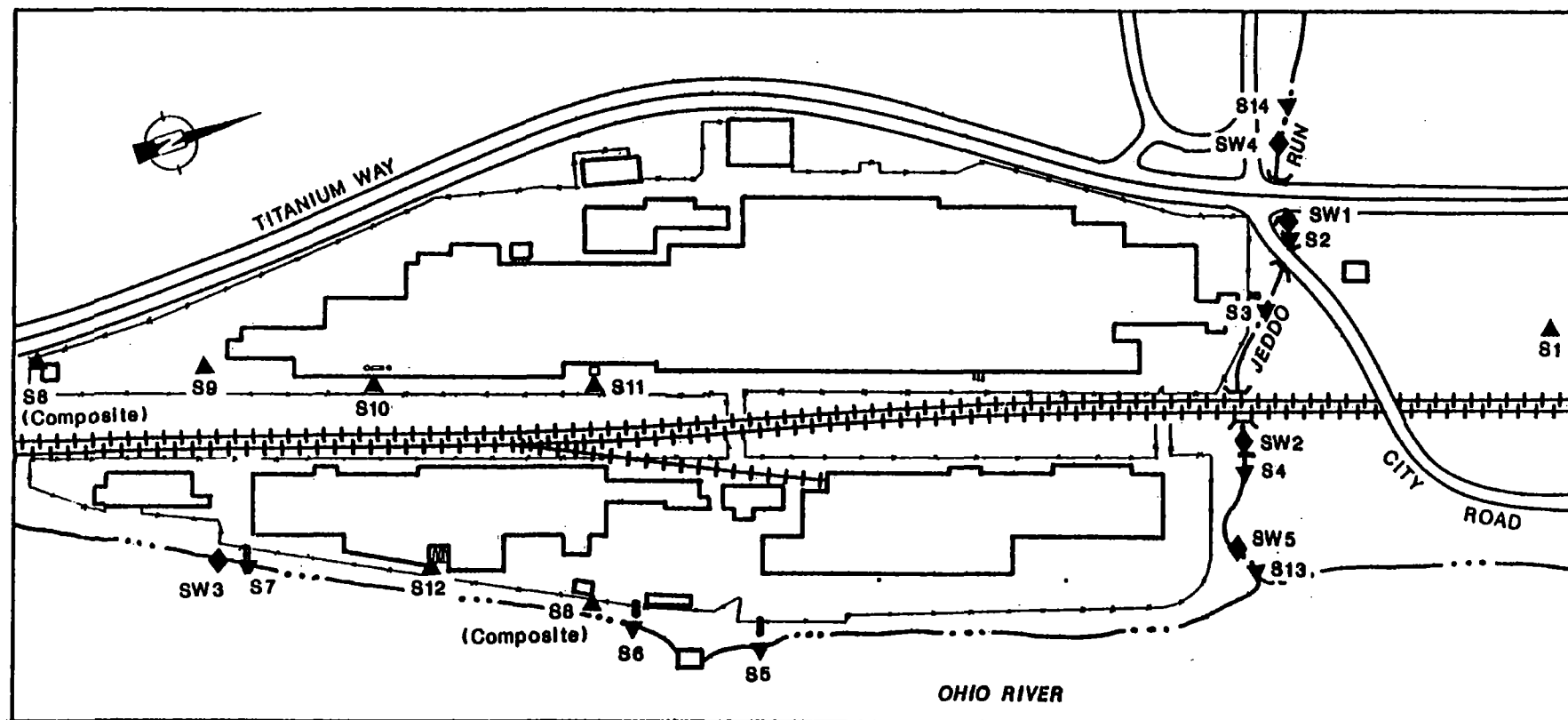
**ATTACHMENT B**

**SCREENING SITE INSPECTION  
SOIL, SURFACE WATER, AND SEDIMENT SAMPLING LOCATIONS  
AND ANALYTICAL RESULTS**

**TITANIUM METALS CORPORATION  
TORONTO, OHIO**

**(Eight Sheets)**





SOURCE: Ecology and Environment, Inc. 1990.



#### LEGEND

- ▲ SOIL SAMPLE
- ▼ SEDIMENT SAMPLE
- ◆ SURFACE WATER SAMPLE

FIGURE 3-2 SOIL/SEDIMENT AND SURFACE WATER SAMPLING LOCATIONS

Table 4-1  
RESULTS OF CHEMICAL ANALYSIS OF  
FII-COLLECTED SOIL/SEDIMENT SAMPLES

Sample Collection Information and Parameters	S1	S2	S3	S4	S5	S6	Sample Number	S8	S9	S10	S11	S12
Date	12/13/88	12/13/88	12/13/88	12/13/88	12/13/88	12/13/88	12/13/88	12/13/88	12/13/88	12/13/88	12/13/88	12/13/88
Time	1430	1015	1130	1045	1040	1215	1245	1145	1215	1230	1315	1330
CLP Organic Traffic Report Number	ECW05	ECW06	ECW07	ECW08	ECW09	ECW10	ECW11	ECW12	ECW13	ECW14	ECW15	ECW16
CLP Inorganic Traffic Report Number	MEBW16	MEBW17	MEBW18	MEBW19	MEBW20	MEBW21	MEBW22	MEBW23	MEBW24	MEBW25	MEBW26	MEBW27
Compound Detected (values in ug/kg)												
<b>Volatile Organics</b>												
methylene chloride	26	84	53	61	56	61	41	22	21	40	31	41
acetone	--	44	113	90	--	213	26	--	18	18	--	--
toluene	12	--	--	--	--	63	--	20	8	63	--	--
<b>Semi-volatile Organics</b>												
benzoic acid	--	--	--	--	--	933	--	--	--	1103	--	--
2-methylnaphthalene	2003	1703	1203	393	1003	2203	1603	923	--	430	510	2303
acenaphthylene	--	--	603	363	363	903	453	--	--	--	593	420
acenaphthene	--	--	503	--	--	--	--	--	--	--	--	--
dibenzofuran	583	533	673	--	503	873	553	--	--	1003	1203	1703
fluorene	--	--	--	463	--	--	--	--	--	--	--	1803
phenanthrene	1503	5803	1,100	530	3203	550	3903	--	--	2703	2603	4,400
anthracene	--	1203	2303	1203	843	2103	543	--	--	--	523	1,300
fluoranthene	373	1,200	2,300	940	470	990	3903	1003	--	1803	--	6,500
pyrene	433	1,100	1,800	810	4003	830	3403	813	--	1803	2703	5,500
butylbenzylphthalate	--	--	413	--	--	--	--	--	--	--	--	--
benzo(a)anthracene	--	5803	1,000	440	2703	620	3003	--	--	1303	2203	4,300
chrysene	503	690	1,200	510	2803	650	4103	853	--	1503	2803	3,700
di-n-octylphthalate	--	--	533	973	--	--	--	--	--	493	--	2203
benzo(b)fluoranthene	--	710	1,600	440	2703	630	2903	1303	--	1503	420	4,000
benzo(k)fluoranthene	--	6003	980	4103	2003	490	1903	--	--	1603	2703	2,700
benzo(a)pyrene	--	720	1,300	500	2603	620	2403	--	--	1503	2703	3,300
indeno(1,2,3-cd)pyrene	--	2303	710	2603	--	3703	1903	--	--	963	--	1,4003
dibenz(a,h)anthracene	--	--	--	--	--	--	--	--	--	--	--	450
benzo(g,h,i)perylene	--	3503	4903	--	--	--	1503	--	--	--	--	9503
<b>Pesticides/PCBs</b>												
Aroclor 1254	--	--	6503	--	--	8003	--	--	--	--	39,000	--
<b>Analite Detected (values in mg/kg)</b>												
plutonium	10,200	9,520	9,460	8,640	8,140	9,580	14,500	35,800	11,600	6,580	8,480	15,300
antimony	--	--	--	--	--	--	--	--	--	--	--	8,2300
arsenic	71.1	111.2	9.1	16.0	5.4	15.2	10.6	0.673WB	10.13W	28.1	19.9	14.1
barium	113	8913	119	89.2	164	158	171	339	51	75.2	79.7	173

Table 4-1 (Cont.)

Sample Collection Information and Parameters	Sample Number	
	S13	S14
Date	12/13/88	12/13/88
Time	1050	1030
CLP Organic Traffic Report Number	ECW17	ECW32
CLP Inorganic Traffic Report Number	MEBW28	MEBW43
<b>Compounds Detected</b> (values in ug/kg)		
<b>Volatile Organics</b>		
ethylene	---	---
chloride	---	---
acetone	---	---
toluene	---	---
<b>Semi-volatile Organics</b>		
benzoic acid	---	983
2-methylnaphthalene	---	333
acenaphthylene	---	383
acenaphthene	---	---
dibenzofuran	---	4103
fluorene	1,7003	1103
phenanthrene	5503	720
anthracene	2,9003	630
fluoranthene	2,4003	---
pyrene	---	3703
butylbenzylphthalate	1,5003	4003
benzofluoranthene	1,4003	---
chrysene	---	4303
di-n-octylphthalate	9603	4203
benzofluoranthene	1,1003	4203
benzo[a]fluoranthene	1,0003	2403
benzo[a]pyrene	---	---
indeno[1,2,3-cd]pyrene	---	---
dibenz[ah]anthracene	---	---
benzo[ghi]perylene	---	---
<b>Polychlorinated Biphenyls (PCBs)</b>		
Arctic 1254	---	---
<b>Metals Detected</b> (values in ug/g)		
aluminum	9,390	9,120
arsenic	6.8	7.0
barium	90.9	124
beryllium	4.5	1.2



Table 4-1: (Cont.)

COMPOUND QUALIFIER

J

DEFINITION

Indicates an estimated value.

INTERPRETATION

Compound value may be semiquantitative.

ANALYTE QUALIFIERS

N

DEFINITION

Spike recoveries outside QC protocols, which indicates a possible matrix problem. Data may be biased high or low.

Value is real, but is above instrument OL and below CRL.

Value is above CRL and is an estimated value because of a QC protocol.

Post-digestion spike for furnace AA analysis is out of control limits (35-115%); while sample absorbance is <50% of spike absorbance.

INTERPRETATION

Value may be quantitative or semi-quantitative.

Value may be quantitative or semi-quantitative.

Value may be semiquantitative.

Value may be semiquantitative.

Source: Ecology and Environment, Inc. 1990.



Table 4-1  
RESULTS OF CHEMICAL ANALYSIS OF  
FII-COLLECTED SOIL/SEDIMENT SAMPLES

Sample Collection Information and Parameters	S1	S2	S3	S4	S5	S6	Sample 8087	S8	S9	S10	S11	S12
Date	12/13/88	12/13/88	12/13/88	12/13/88	12/13/88	12/13/88	12/13/88	12/13/88	12/13/88	12/13/88	12/13/88	12/13/88
Time	1430	1015	1130	1045	1040	1215	1245	1145	1215	1230	1315	1330
GLP Organic Traffic Report Number	ECW05	ECW06	ECW07	ECW08	ECW09	ECW10	ECW11	ECW12	ECW13	ECW14	ECW15	ECW16
GLP Inorganic Traffic Report Number	NEBW16	NEBW17	NEBW18	NEBW19	NEBW20	NEBW21	NEBW22	NEBW23	NEBW24	NEBW25	NEBW26	NEBW27
Compound Detected (values in ug/kg)												
Volatiles Organics	25	84	51	61	36	63	43	22	21	40	37	41
Ethylene chloride		44	117	90		63	35	20	18	61		
Acetone	12											
Isoprene						933				1103		
Nonvolatiles Organics										430	510	2303
Benzoic acid	2003	1703	1203	393	1003	2203	1603	923			593	420
1-methyl naphthalene			603	363	363	903	453					
Acenaphthylene			503							1003	1203	1703
Acenaphthene	583	533	673		503	873	533			2703	2603	4,400
Dibenzofuran				463							523	1,300
Fluorene	1503	5803	1,100	530	3203	530	2903			1803	2703	5,500
Phenanthrene		1203	2303	1203	843	2103	3803	1003		1803	2703	5,500
Anthracene	373	1,200	2,300	940	470	990	3403	813				
Fluoranthene	433	1,100	1,800	810	4003	830						
Pyrene			413				3003			1303	2203	4,100
Butylbenzylphthalate		5803	1,000	440	2703	620	4103	853		1503	2803	3,700
Nonmethylated naphthalene	503	690	1,200	510	2803	650				493	420	4,000
Chrysene			533	973		630	2903	1303		1503	2703	3,700
1-methyl naphthalene		710	1,600	440	2703	490	1703			1603	2703	3,700
Benzo[a]fluoranthene		6003	980	4103	2003	620	2403			1503	2703	3,700
Benzo[b]fluoranthene		720	1,300	500	2503	3703	1903			963		450
Benzo[k]fluoranthene		2303	710	2503								3503
Indeno[1,2,3-cd]pyrene							1503					
Dibenz[a,h]anthracene		3503	1903									
Benzo[a]pyrene			6503			8003					39,000	
Benzo[e]pyrene												
Benzo[a]anthracene												
Benzo[b]anthracene												
Benzo[k]anthracene												
Benzo[a]fluoranthene												
Benzo[b]fluoranthene												
Benzo[k]fluoranthene												
Indeno[1,2,3-cd]pyrene												
Dibenz[a,h]anthracene												
Benzo[a]pyrene												
Benzo[e]pyrene												
Benzo[a]anthracene												
Benzo[b]anthracene												
Benzo[k]anthracene												
Benzo[a]fluoranthene												
Benzo[b]fluoranthene												
Benzo[k]fluoranthene												
Indeno[1,2,3-cd]pyrene												
Dibenz[a,h]anthracene												
Benzo[a]pyrene												
Benzo[e]pyrene												
Benzo[a]anthracene												
Benzo[b]anthracene												
Benzo[k]anthracene												
Benzo[a]fluoranthene												
Benzo[b]fluoranthene												
Benzo[k]fluoranthene												
Indeno[1,2,3-cd]pyrene												
Dibenz[a,h]anthracene												
Benzo[a]pyrene												
Benzo[e]pyrene												
Benzo[a]anthracene												
Benzo[b]anthracene												
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Benzo[a]fluoranthene												
Benzo[b]fluoranthene												
Benzo[k]fluoranthene												
Indeno[1,2,3-cd]pyrene												
Dibenz[a,h]anthracene												
Benzo[a]pyrene												
Benzo[e]pyrene												
Benzo[a]anthracene												
Benzo[b]anthracene												
Benzo[k]anthracene												
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Benzo[b]fluoranthene												
Benzo[k]fluoranthene												
Indeno[1,2,3-cd]pyrene												
Dibenz[a,h]anthracene												
Benzo[a]pyrene												
Benzo[e]pyrene												
Benzo[a]anthracene												
Benzo[b]anthracene												
Benzo[k]anthracene												
Benzo[a]fluoranthene												
Benzo[b]fluoranthene												
Benzo[k]fluoranthene												
Indeno[1,2,3-cd]pyrene												
Dibenz[a,h]anthracene												
Benzo[a]pyrene												
Benzo[e]pyrene												
Benzo[a]anthracene												
Benzo[b]anthracene												
Benzo[k]anthracene												
Benzo[a]fluoranthene												
Benzo[b]fluoranthene												
Benzo[k]fluoranthene												
Indeno[1,2,3-cd]pyrene												
Dibenz[a,h]anthracene												
Benzo[a]pyrene												
Benzo[e]pyrene												
Benzo[a]anthracene												
Benzo[b]anthracene												
Benzo[k]anthracene												
Benzo[a]fluoranthene												
Benzo[b]fluoranthene												
Benzo[k]fluoranthene												
Indeno[1,2,3-cd]pyrene												
Dibenz[a,h]anthracene												
Benzo[a]pyrene												
Benzo[e]pyrene												
Benzo[a]anthracene												
Benzo[b]anthracene												
Benzo[k]anthracene												
Benzo[a]fluoranthene												
Benzo[b]fluoranthene												
Benzo[k]fluoranthene												
Indeno[1,2,3-cd]pyrene												
Dibenz[a,h]anthracene												
Benzo[a]pyrene												
Benzo[e]pyrene												
Benzo[a]anthracene												
Benzo[b]anthracene												
Benzo[k]anthracene												
Benzo[a]fluoranthene												
Benzo[b]fluoranthene												
Benzo[k]fluoranthene												
Indeno[1,2,3-cd]pyrene												
Dibenz[a,h]anthracene												
Benzo[a]pyrene												
Benzo[e]pyrene												
Benzo[a]anthracene												
Benzo[b]anthracene												
Benzo[k]anthracene												
Benzo[a]fluoranthene												
Benzo[b]fluoranthene												
Benzo[k]fluoranthene												
Indeno[1,2,3-cd]pyrene												
Dibenz[a,h]anthracene												
Benzo[a]pyrene												
Benzo[e]pyrene												
Benzo[a]anthracene												
Benzo[b]anthracene												
Benzo[k]anthracene												
Benzo[a]fluoranthene												
Benzo[b]fluoranthene												
Benzo[k]fluoranthene												
Indeno[1,2,3-cd]pyrene												
Dibenz[a,h]anthracene												
Benzo[a]pyrene												
Benzo[e]pyrene												
Benzo[a]anthracene												
Benzo[b]anthracene												
Benzo[k]anthracene												
Benzo[a]fluoranthene												
Benzo[b]fluoranthene												
Benzo[k]fluoranthene												
Indeno[1,2,3-cd]pyrene												
Dibenz[a,h]anthracene												
Benzo[a]pyrene												
Benzo[e]pyrene												
Benzo[a]anthracene												
Benzo[b]anthracene												
Benzo[k]anthracene												
Benzo[a]fluoranthene												
Benzo[b]fluoranthene												
Benzo[k]fluoranthene												
Indeno[1,2,3-cd]pyrene												
Dibenz[a,h]anthracene					</							

[illegible][illegible]



Sample Number	beryllium	cadmium	calcium	chromium	cobalt	copper	iron	lead	manganese	nickel	potassium	salt	silver	sodium	vanadium	zinc	zinc
81	1.6	7.340	22.6	18	38.2	29,200	51.6	3,360	883	37,800	111	2,300	397	21.3	1,040	106.18	118
82	1.28	4,580	10.48	59.8	10.48	37,800	150	34,500	9.38	17.1	103	24,800	1.7	50,500	22.6	1.98	1.8
83	2.0	0.468	17,600	30.1	12.9	34,500	5.310	1,840	48,200	36	5,330	1,410	25.8	7408	0.123MB	0.378	0.358
84	2.0	18,300	13	50	13	50	13	50	13	50	13	50	13	50	13	50	13
85	2.0	24,800	17.1	218	218	48,200	36	5,330	1,410	25.8	7408	0.123MB	0.378	0.358	0.378	0.358	0.378
86	1.8	1.7	50,500	22.6	130	52,600	113	5,330	3,270	1.2	431	7138	0.513MB	0.918	0.358	43.6	366
87	7.3	170,900	67.1	19.8	47.3	10,500	57.8	2,450	13,950	45.7	35,600	5,060	12.3	3,540	0.963MB	0.101MB	61.3
88	59	1.08	1,360	10.18	14.4	9.68	40,000	86	2,280	13.4	27,200	335	18.9	1,020B	1,061B	161.1B	19.8
89	59	1.1	5,460	17.7	17.7	17.7	46.5	30,900	81.8	3,060	356	19	0.123MB	0.381B	161.1B	19.8	59.6
90	0.868	0.488	20,400	17.7	17.7	17.7	46.5	30,900	81.8	3,060	356	19	0.123MB	0.381B	161.1B	19.8	59.6
91	0.868	0.488	20,400	17.7	17.7	17.7	46.5	30,900	81.8	3,060	356	19	0.123MB	0.381B	161.1B	19.8	59.6
92	0.868	0.488	20,400	17.7	17.7	17.7	46.5	30,900	81.8	3,060	356	19	0.123MB	0.381B	161.1B	19.8	59.6
93	0.868	0.488	20,400	17.7	17.7	17.7	46.5	30,900	81.8	3,060	356	19	0.123MB	0.381B	161.1B	19.8	59.6
94	0.868	0.488	20,400	17.7	17.7	17.7	46.5	30,900	81.8	3,060	356	19	0.123MB	0.381B	161.1B	19.8	59.6
95	0.868	0.488	20,400	17.7	17.7	17.7	46.5	30,900	81.8	3,060	356	19	0.123MB	0.381B	161.1B	19.8	59.6
96	0.868	0.488	20,400	17.7	17.7	17.7	46.5	30,900	81.8	3,060	356	19	0.123MB	0.381B	161.1B	19.8	59.6
97	0.868	0.488	20,400	17.7	17.7	17.7	46.5	30,900	81.8	3,060	356	19	0.123MB	0.381B	161.1B	19.8	59.6
98	0.868	0.488	20,400	17.7	17.7	17.7	46.5	30,900	81.8	3,060	356	19	0.123MB	0.381B	161.1B	19.8	59.6
99	0.868	0.488	20,400	17.7	17.7	17.7	46.5	30,900	81.8	3,060	356	19	0.123MB	0.381B	161.1B	19.8	59.6
100	0.868	0.488	20,400	17.7	17.7	17.7	46.5	30,900	81.8	3,060	356	19	0.123MB	0.381B	161.1B	19.8	59.6



Table 4-1 (Cont.)

Sample Collection Information  
and ParametersSample Number  
S13 S14

cadmium		
calcium		
chromium	5,340	8,060
cobalt	28.2	26.8
copper	15.4	10.78
iron	45.2	20.6
lead	55,000	29,200
magnesium	31.6	40.3
manganese	2,930	3,260
mercury	1,380	1,410
nickel		0.17
potassium	29.3	21.1
selenium	9268	1,210
silver	0.153NB	0.423NB
sodium	0.748	
thallium	20938	20538
vanadium		
zinc	31.9	23.3
cyanide	134	122
	0.72	

Not detected.

INTERPRETATION  
Compound value may be semiquantitative.

INTERPRETATION  
Value may be quantitative or semiquantitative.

INTERPRETATION  
Value may be quantitative or semiquantitative.

INTERPRETATION  
Value may be semiquantitative.

DEFINITION

Indicates an estimated value.

DEFINITION

Spike recoveries outside QC protocols, which indicates a possible matrix problem. Data may be biased high or low.

Value is real, but is above instrument DL and below CRL.

Value is above CRL and is an estimated value because of a QC protocol.

Post-digestion spike for furfural AA analysis is out of control limits (95-115%), while sample absorbance is 50% of spike absorbance.

Source: Ecology and Environment, Inc. 1990.

ANALYTE QUALIFIERS

COMPOUND QUALIFIERS

4-1 (Cont.)

Table 4-2  
RESULTS OF CHEMICAL ANALYSIS OF  
FIT-COLLECTED SURFACE WATER SAMPLES

Sample Collection Information and Parameters	Sample Number						
	SW1	SW2	SW3	Duplicate	SW4	SW5	Blank
Date	12/14/88	12/14/88	12/14/88	12/14/88	12/14/88	12/14/88	12/14/88
Time	0945	1015	1030	1030	0945	1015	0800
CLP Organic Traffic Report Number	ECW18	ECW19	ECW20	ECW23	ECW21	ECW22	ECW24
CLP Inorganic Traffic Report Number	MEBW29	MEBW30	MEBW31	MEBW34	MEBW32	MEBW33	MEBW35
Temperature (°C)	9	14	12	13	2	9	10
Specific Conductivity (μmhos/cm)	600	700	500	600	700	700	0
pH	7.30	8.04	7.19	7.15	7.54	7.70	7.06
<u>Compound Detected</u> (values in μg/L)							
<u>Volatile Organics</u>							
acetone	26	--	--	--	--	26	--
1,1-dichloroethane	--	--	3J	3J	--	3J	--
chloroform	--	--	--	--	--	--	6
1,1,1-trichloroethane	--	10	14	14	--	--	--
tetrachloroethene	--	--	--	--	--	--	7
<u>Analyte Detected</u> (values in μg/L)							
aluminum	402	184JB	125JB	118JB	313	502	27.5JB
arsenic	--	1.0B	0.50B	--	--	0.40B	--
barium	26.2B	40.4B	40.4B	38.7B	37.9B	32.5B	--
beryllium	--	--	0.41B	0.31B	0.35B	0.41B	--
calcium	77,200	84,200	69,000	65,700	78,400	76,200	111B
chromium	--	--	7.5B	9.5B	--	--	--
cobalt	--	--	14.2B	17.3B	--	--	--
copper	74.6	32.6J	24.9JB	16.7JB	12.2JB	20.7JB	9.6JB
iron	952	388	434	369	573	430	--
lead	7.9	1.4JB	0.30JB	0.40JB	--	0.90JB	0.50B
magnesium	13,700	14,100	11,900	11,400	17,400	12,900	--

Table 4-2 (Cont.)

Sample Collection Information and Parameters	Sample Number						Blank
	SW1	SW2	SW3	Duplicate	SW4	SW5	
manganese	43.5	90.9	120	114	37.9	159	--
nickel	--	7.1B	5.3B	6.7B	--	--	--
potassium	2,270B	3,130B	4,080B	3,690B	2,190B	2,710B	--
selenium	0.90JB	1.1JB	0.30JB	0.30JB	0.60JB	0.50JB	--
sodium	38,700	44,500	33,200	31,600	64,200	36,800	642JB
vanadium	55	270	32.6B	38.6B	--	154	--
zinc	69.3	14.5JB	21.6J	29.5J	112	21.9J	4.6JB
cyanide	44.5	--	--	--	--	--	--

-- Not detected.

COMPOUND QUALIFIER	DEFINITION	INTERPRETATION
J	Indicates an estimated value.	Compound value may be semiquantitative.

ANALYTE QUALIFIERS	DEFINITION	INTERPRETATION
B	Value is real, but is above instrument DL and below CRDL.	Value may be quantitative or semi-quantitative.
J	Value is above CRDL and is an estimated value because of a QC protocol.	Value may be semiquantitative.

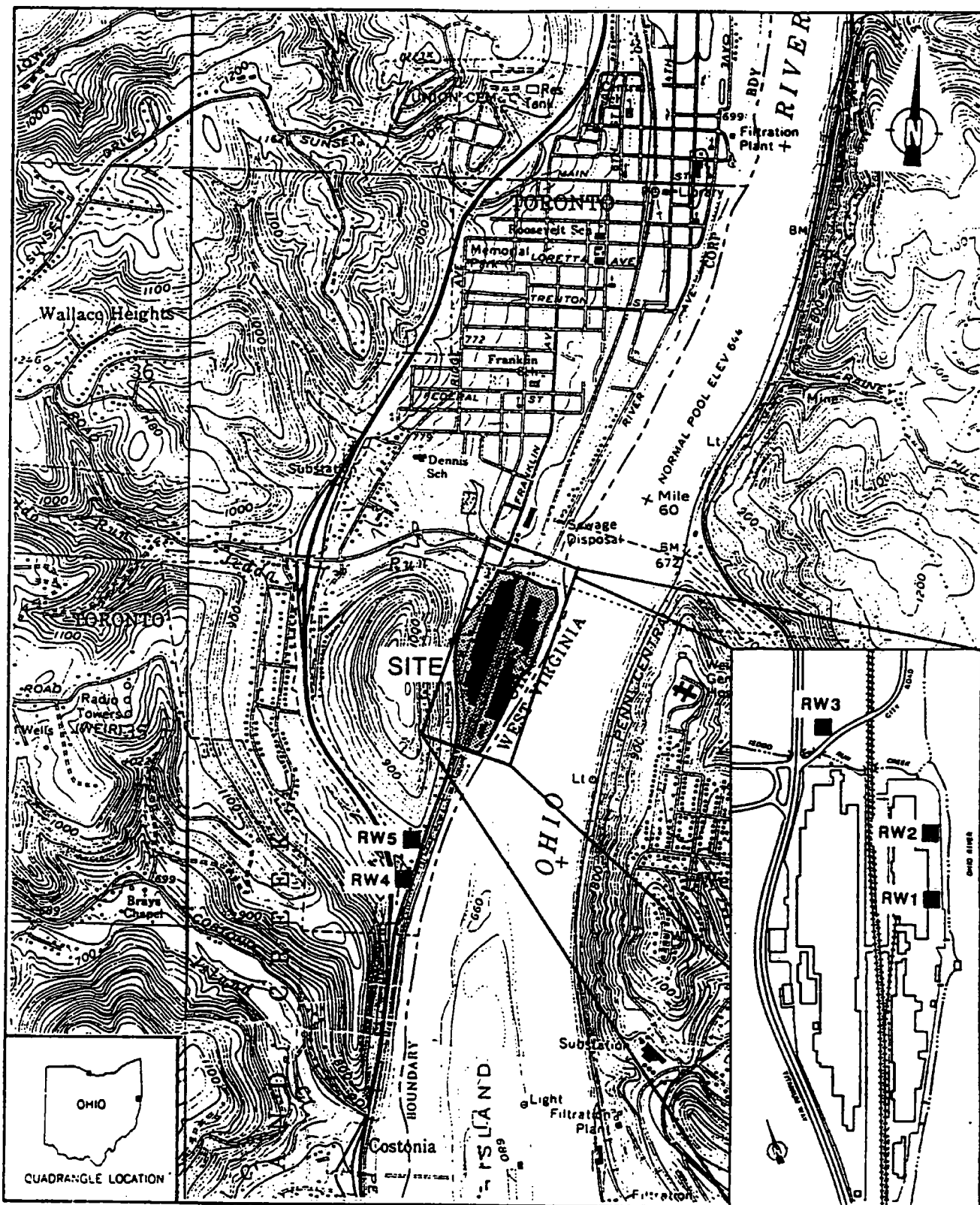
Source: Ecology and Environment, Inc. 1990.

**ATTACHMENT C**

**SCREENING SITE INSPECTION GROUNDWATER SAMPLING LOCATIONS  
AND ANALYTICAL RESULTS**

**TITANIUM METALS CORPORATION  
TORONTO, OHIO**

**(Three Sheets)**



SOURCE: Ecology and Environment, Inc. 1990; BASE MAPS: USGS, Knoxville, OH, WV Quadrangle, 7.5 Minute Series, 1968; Weirton WV, PA, OH Quadrangle, 7.5 Minute Series, 1968.

FIGURE 3-3 GROUNDWATER SAMPLING LOCATIONS

Table 4-3  
RESULTS OF CHEMICAL ANALYSIS OF  
FIT-COLLECTED GROUNDWATER SAMPLES

Sample Collection Information and Parameters	RW1	RW2	RW3	Sample Number Duplicate	RW4	RW5	Blank
Date	12/14/88	12/14/88	12/14/88	12/14/88	12/14/88	12/14/88	12/14/88
Time	0930	0935	1115	1115	0930	1110	0800
CLP Organic Traffic Report Number	ECW25	ECW26	ECW27	ECW30	ECW28	ECW29	ECW31
CLP Inorganic Traffic Report Number	MEBW36	MEBW37	MEBW38	MEBW41	MEBW39	MEBW40	MEBW42
Temperature (°C)	11	12	9	9	7	17	10
Specific Conductivity (µmhos/cm)	0	400	600	600	500	1200	0
pH	7.18	7.36	7.02	7.02	7.02	6.67	7.06
<u>Compound Detected</u> (values in µg/L)							
<u>Volatile Organics</u>							
methylene chloride	--	--	1J	2J	2	4	2
chloroform	--	--	1	1J	--	--	6
1,1,1-trichloroethane	--	--	1J	3J	--	--	--
bromodichloroethane	--	--	--	--	--	--	3
dibromochloromethane	--	--	--	--	--	--	1J
tetrachloroethene	--	--	--	--	--	--	7
acrolein	--	--	--	--	--	--	1J
<u>Semivolatile Organics</u>							
phenol	--	--	1J	2	--	1J	2
<u>Analyte Detected</u> (values in µg/L)							
aluminum	14.4B	12.3B	--	--	--	55.1B	--
antimony	--	--	--	--	--	10	--
barium	42.1JEB	41.6JEB	35.5JEB	37JEB	40.2JEB	--	--
beryllium	1.5B	1.1B	--	1.5B	1.1B	--	--
calcium	48,700	48,300	79,900	79,800	91,000	90.6B	28.6B
cobalt	--	2.5JB	--	--	--	--	--

Table 4-3 (Cont.)

Sample Collection Information and Parameters	Sample Number						
	RW1	RW2	RW3	Duplicate	RW4	RW5	Blank
copper	--	--	31.8	46.4	--	15.3	--
iron	47.1B	23.4B	169	212	4,470	56.2B	9.8B
lead	1	--	16	23J	--	1	--
magnesium	9,470	9,350	14,400	14,400	22,400	27.4B	16.7B
manganese	200	209	16	16.8	914	--	--
potassium	3,640	3,770	2,410J	2,540J	2,990	--	619JB
sodium	26,200	25,800	32,200	32,200	47,400	261,000	81.3JB
vanadium	3.5JB	--	--	--	--	--	--
zinc	--	--	6.9B	4.7B	--	--	--

-- Not detected.

COMPOUND QUALIFIER	DEFINITION	INTERPRETATION
J	Indicates an estimated value.	Compound value may be semiquantitative.

ANALYTE QUALIFIERS	DEFINITION	INTERPRETATION
E	Estimated or not reported due to interference. See laboratory narrative.	Analyte or element was not detected, or value may be semiquantitative.
B	Value is real, but is above instrument DL and below CRDL.	Value may be quantitative or semiquantitative.
J	Value is above CRDL and is an estimated value because of a QC protocol.	Value may be semiquantitative.

Source: Ecology and Environment, Inc. 1990.



**ENCLOSURE 2**

**U.S. ENVIRONMENTAL PROTECTION AGENCY  
RECOMMENDATION FOR THE  
TITANIUM METALS CORPORATION  
EPA ID NO. OHD 098 435 134**

(One Sheet)

## U.S. ENVIRONMENTAL PROTECTION AGENCY RECOMMENDATION

Site Name: Titanium Metals Corporation  
Toronto, Jefferson County, Ohio

EPA ID No.: OHD 098 435 134

Report Author: Christine Easterling  
PRC Environmental Management, Inc.  
214/754-8764

Contractor Project Manager: Christopher Scott  
PRC Environmental Management, Inc.  
312/856-8700

### EPA RECOMMENDATION

### SIGNATURE

### DATE

"H": High priority for further site assessment

---

---

"L": Low priority for further site assessment

---

---

"D": Deferred to other authority (RCRA,  
TSCA, or NRC)

---

---

"N": No further action

---

---

EPA Comments:

---

---

---

---

Table 4-3  
RESULTS OF CHEMICAL ANALYSIS OF  
FIT-COLLECTED GROUNDWATER SAMPLES

Sample Collection Information and Parameters	Sample Number						
	RW1	RW2	RW3	Duplicate	RW4	RW5	Blank
Date	12/14/88	12/14/88	12/14/88	12/14/88	12/14/88	12/14/88	12/14/88
Time	0930	0935	1115	1115	0930	1110	0800
CLP Organic Traffic Report Number	ECW25	ECW26	ECW27	ECW30	ECW28	ECW29	ECW31
CLP Inorganic Traffic Report Number	MEBW36	MEBW37	MEBW38	MEBW41	MEBW39	MEBW40	MEBW42
Temperature (°C)	11	12	9	9	7	17	10
Specific Conductivity (µmhos/cm)	0	400	600	600	500	1200	0
pH	7.18	7.36	7.02	7.02	7.02	6.67	7.06
<u>Compound Detected</u>							
(values in µg/L)							
<u>Volatile Organics</u>							
methylene chloride	--	--	1J	2J	2	4	2
chloroform	--	--	1	1J	--	--	6
1,1,1-trichloroethane	--	--	1J	3J	--	--	--
bromodichloromethane	--	--	--	--	--	--	3
dibromochloromethane	--	--	--	--	--	--	1J
tetrachloroethene	--	--	--	--	--	--	7
acrolein	--	--	--	--	--	--	1J
<u>Semivolatile Organics</u>							
phenol	--	--	1J	2	--	1J	2
<u>Analyte Detected</u>							
(values in µg/L)							
aluminum	14.4B	12.3B	--	--	--	55.1B	--
antimony	--	--	--	--	--	10	--
barium	42.1JEB	41.6JEB	35.5JEB	37JEB	40.2JEB	--	--
beryllium	1.5B	1.1B	--	1.5B	1.1B	--	--
calcium	48,700	48,300	79,900	79,800	91,000	90.6B	28.6B
cobalt	--	2.5JB	--	--	--	--	--

Table 4-3 (Cont.)

Sample Collection Information and Parameters	RW1	RW2	RW3	Sample Number	RW4	RW5	Blank
				Duplicate			
copper	--	--	31.8	46.4	--	15.3	--
iron	47.1B	23.4B	169	212	4,470	56.2B	9.8B
lead	1	--	16	23J	--	1	--
magnesium	9,470	9,350	14,400	14,400	22,400	27.4B	16.7B
manganese	200	209	16	16.8	914	--	--
potassium	3,640	3,770	2,410J	2,540J	2,990	--	619JB
sodium	26,200	25,800	32,200	32,200	47,400	261,000	81.3JB
vanadium	3.5JB	--	--	--	--	--	--
zinc	--	--	6.9B	4.7B	--	--	--

-- Not detected.

## COMPOUND QUALIFIER

## DEFINITION

## INTERPRETATION

J

Indicates an estimated value.

Compound value may be semiquantitative.

## ANALYTE QUALIFIERS

## DEFINITION

## INTERPRETATION

E

Estimated or not reported due to interference. See laboratory narrative.

Analyte or element was not detected, or value may be semiquantitative.

B

Value is real, but is above instrument DL and below CRDL.

Value may be quantitative or semiquantitative.

J

Value is above CRDL and is an estimated value because of a QC protocol.

Value may be semiquantitative.

Source: Ecology and Environment, Inc. 1990.

246 N. High Street  
Post Office Box 118  
Columbus, Ohio 43266-0118

Telephone (614) 466-3543



RICHARD F. CELESTE  
Governor

RECEIVED

OCT 05 1989

Pre-...  
11-...

October 2, 1989

Debbie Burlow  
Box 8A Titanium Way  
Toronto OH 43964

Dear Ms. Burlow:

Enclosed is a copy of a specific laboratory sample collected from the water well located at the above address. The sample was collected by representatives of the United States Environmental Protection Agency.

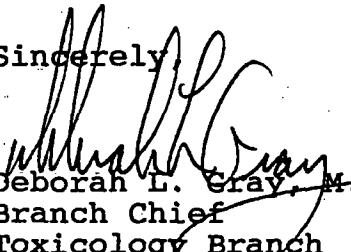
The concentration of sodium exceeded certain Health Related Guidance Values at the date and time of sampling. Sodium is a major component of brine and is also found in road salt for ice control. Sodium is also found naturally occurring in many foods. The daily sodium intake of the average American is much higher than the actual physiological body requirement. The American Heart Association recommends that persons on a low sodium diet drink water containing no more than 20,000 parts per billion (ppb) of sodium. The concentration of sodium in your well was 261,000 ppb.

One will also find other compounds listed in the laboratory results, none of which approached any health related standards. For the most part, these compounds can be found in all naturally occurring water.


Please feel free to contact us at (614) 644-6447 (Deborah Gray) or (614) 466-1390 (Scott Golden) if you have any questions concerning your water supply.

Debbie Burlow  
October 2, 1989  
Page Two

Sincerely,



Deborah L. Gray, M.S.  
Branch Chief  
Toxicology Branch  
Division of Epidemiology & Toxicology  
Ohio Department of Health  
P.O. Box 118  
Columbus, Ohio 43266-0118



Scott Golden, R.S., M.S.E.H.  
Program Administrator  
Private Water System & Household Sewage Disposal Program  
Division of Local Environmental Health Program Mgmt. Services  
Ohio Department of Health  
P.O. Box 118  
Columbus, Ohio 43266-0118

/ts:TS39

Enclosure

cc: William D. Messinger, U.S. EPA  
Mark Besel, Ohio EPA  
Jefferson County Health Department



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

230 SOUTH DEARBORN ST.  
CHICAGO, ILLINOIS 60604

40 ft.  
RW5

REPLY TO THE ATTENTION OF:

Sample Collection Date: 12/14/88

Recipient Information: Debbie Barlow  
Name

Box 8A Titanium Way  
Street Address

Toronto OH 43964  
City State Zip Code

614 537-3444  
Telephone Number

Ecology and Environment, Inc. has been retained by the United States Environmental Protection Agency (U.S. EPA) under contract 68-01-7347 for the purpose of evaluating sites under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), and the Superfund Amendments and Reauthorization Act (SARA).

A copy of the sample analysis of samples collected from your property will be forwarded by the U.S. EPA within 6 months. If a copy of the sample analysis is not received within 6 months of the sample collection date noted above, a written request may be sent to the U.S. EPA representative indicated below.

It is essential to include the U.S. EPA Identification Number listed below to ensure that your request is properly referenced.

U. S. EPA Identification Number

OH0098435134

Address requests to:

William Messenger, Chief  
Pre-Remedial Unit (5HR11)  
United States Environmental Protection Agency  
230 South Dearborn Street  
Chicago, Illinois 60604  
(312) 353-1057

Distribution:

White: FIT Site File; TDD No.: F05-8711-118 ; PAN: F0H0803SA  
Yellow: Recipient  
Pink: U.S. EPA

ANALYTICAL DATA AND RELATED HEALTH ADVISORY TABLE

REVISION #1, EFFECTIVE 3 APRIL 1989

Sample: *RW5/MEBW 46/ECW 29*

Sample Collection Information and Parameters	Detection Limits (ug/L)	Sample Result (ug/L)	Lab Blank (ug/L)	Comments	Status Reg. A	Standards			Status RA A	Health Advisories							Cancer Group
						RIPDMR (ug/L)	MCLD (ug/L)	MCL (ug/L)		10-Kg Child			70-Kg Adult			ug/L at 10-4 Cancer Risk	
										One-Day (ug/L)	Ten-Day (ug/L)	Longer-Term (ug/L)	Longer-Term (ug/L)	RfD (ug/kg/day)	DWEL (ug/L)	Lifetime (ug/L)	
Ground Detected																	
Volatile Organics																	
CHLOROMETHANE	1.5				L	-	-	-	D	-	-	-	-	-	-	-	-
BROMOMETHANE	1.5				-	-	-	-	D	-	-	-	-	-	-	-	-
VINYL CHLORIDE	1.5				F	-	ZERO	2	F	3000	3000	10	50	-	-	1.5	A
CHLOROETHANE	1.5				L	-	-	-	D	-	-	-	50	-	-	-	-
ETHYLENE CHLORIDE	1				F	-	-	-	F	10000	2000	-	-	60	2000	300	B2
ACETONE	5																
CARBON DISULFIDE	5																
1,1-DICHLOROETHANE	1.5				F	-	7	7	F	2000	1000	1000	4000	9	400	7	C
1,1-DICHLOROETHANE	1.5				L	-	-	-	D	-	-	-	-	-	-	-	-
1,2-DICHLOROETHANE (TOTAL)	1.5				F	-	70	70	F	4000	1000	1000	1000	10	400	70	D
CHLOROFORM	1.5				L	100	-	-	D	-	-	-	-	10	-	600	B2
1,2-DICHLOROETHANE	1.5				F	-	ZERO	5	F	700	700	700	2600	-	-	40	B2
BUTANONE (MEK)	5				-	-	-	-	F	80000	8000	3000	9000	50	900	200	D
1,1,1-TRICHLOROETHANE	1.5				F	-	200	200	F	100000	40000	40000	100000	90	1000	200	D
CARBON TETRACHLORIDE	1.5				F	-	ZERO	5	F	4000	200	70	300	0.7	30	30	B2
VINYL ACETATE	5																
MONODICHLOROMETHANE	1.5				L	100	-	-	D	-	-	-	-	2	-	-	-
1,2-DICHLOROPROPANE	1.5				F	-	ZERO	5	F	-	90	-	-	-	-	60	B2
IS-1,3-DICHLOROPROPENE	2				L	-	-	-	F	30	30	30	100	0.3	10	20	B2
1,1-DICHLOROETHENE	1.5				F	-	ZERO	5	F	-	-	-	-	7	300	300	B2
BROMOCHLOROMETHANE	1.5				L	100	-	-	D	-	-	-	-	2	-	-	-
1,2-TRICHLOROETHANE	1.5				-	-	-	-	D	-	-	-	-	30	-	-	-
BENZENE	1.5				F	-	ZERO	5	F	200	200	-	-	-	-	100	A

BLANK SPACES INDICATE THAT NO ANALYTICAL RESULTS ABOVE DETECTION LIMITS WERE REPORTED IN THE SAMPLE RESULT COLUMN.

IN THE HEALTH RELATED COLUMNS, A BLANK SPACE INDICATES THAT NO STANDARD IS REPORTED.



ANALYTICAL DATA AND RELATED HEALTH ADVISORY TABLE

[illegible]

REVISION #1, EFFECTIVE 3 APRIL 1989

[illegible]

File: RW5/MERB 40/EW 29

ANALYTICAL DATA AND RELATED HEALTH ADVISORY TABLE

REVISION 01, EFFECTIVE 3 APRIL 1989

Sample: RWS/METSW 40/EDW 29					Standards				Health Advisories									
Sample Collection Information and Parameters	Detection Limits	Sample Result	Lab Blank	Comments	Status Reg. A	NTPDWR	ACLO	ACL	Status RA A	10-65 CHILDS			20-65 ADULT			Lifetime Cancer Risk	Cancer Group	
	(ug/L)	(ug/L)	(ug/L)							One-Day	Ten-Day	Longer-Term	Longer-Term	RID	DUEL			
COMPOUND DETECTED						(ug/L)	(ug/L)	(ug/L)		(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/kg/day)	(ug/L)			
Semivolatile Organics (cont)																		
HEXACHLOROXYCLOPENTADIENE	2				L	-	-	-	-	-	-	-	-	7	-	-	-	
2,4,6-TRICHLOROPHENOL	1.5																	
2,4,5-TRICHLOROPHENOL	1.5																	
2-CHLORONAPHTHALENE	1.5																	
2-NITROANILINE	1																	
DIMETHYLPHTHALATE	1.5				L	-	-	-	-	-	-	-	-	-	-	-	D	
ACENAPHTHYLENE	1.5				-	-	-	-	D	-	-	-	-	-	-	-	-	
2,6-DINITROTOLUENE	1																	
3-NITROANILINE	2.5																	
ACENAPHTHENE	1.5																	
2,4-DINITROPHENOL	(15)																	
1-NITROPHENOL	1.5																	
DIBENZOFURAN	1																	
2,4-DINITROTOLUENE	1				L	-	-	-	D	-	-	-	-	-	-	-	-	
DIMETHYLPHTHALATE	1				-	-	-	-	D	-	-	-	-	800	-	-	D	
1-CHLOROPHENYL-PHENYLETHER	1																	
FLUORENE	1								L	-	-	-	-	-	-	-	D	
1-NITROANILINE	2																	
2,6-DINITRO-2-METHYLPHENOL	(15)																	
1-NITROSODIPHENYLAMINE A																		
DIPHENYLAMINE A	1.5																	
1-BROMOPHENYL-PHENYLETHER	1.5																	
HEXACHLOROBENZENE	1.5				-	-	-	-	F	50	50	50	200	0.8	30	-	2	

ANALYTICAL DATA AND RELATED HEALTH ADVISORY TABLE

REVISION #1, EFFECTIVE 3 APRIL 1989

[illegible]

Sample: **RW5 MBW 44/ECW29**

ANALYTICAL DATA AND RELATED HEALTH ADVISORY TABLE

REVISION # 1, EFFECTIVE DATE 3 APL 1989

Sample Collection Information and Parameters					Detection Limits (ug/L)	Sample Result (ug/L)	Lab Blank (ug/L)	Comments	Status Reg. A	Standards			Status HA A	10-kg Child			Health Advisories				us/1 at 10-4 Cancer Risk	Cancer Group
										MIPDR (ug/L)	MCLG (ug/L)	MCL (ug/L)		One-Day (ug/L)	Ten-Day (ug/L)	Longer-Term (ug/L)	Longer-Term (ug/L)	RIU (ug/kg/day)	DMEL (ug/L)	Lifetime (ug/L)		
Compound Detected																						
Pesticide/PCBs																						
ALPHA BHC					(0.010)																	
BETA BHC					(0.005)																	
DELTA BHC					(0.005)																	
GAMMA BHC (LINDANE)					0.005				P	4	0.2	0.2	F	1000	1000	30	100	0.3	10	0.2	3	C
HEPTACHLOR					0.030				P	-	ZERO	0.4	F	10	10	5	5	0.5	20	-	0.8	B2
ALDRIN					0.005																	
HEPTACHLOR EPOXIDE					0.005				P	-	ZERO	0.2	F	10	-	0.1	0.1	0.013	0.4	-	0.4	B2
ENDOSULFAN I					0.010																	
DIELDRIN					0.010				L	-	-	-	F	0.5	0.5	0.5	2	0.05	2	-	0.2	B2
4,4'-DDE					(0.005)																	
ENDRIN					0.010				L	0.2	-	-	F	20	5	5	20	0.015	2	0.3	-	F
ENDOSULFAN II					0.010																	
4,4'-DDD					(0.020)																	
ENDOSULFAN SULFATE					(0.10)																	
4,4'-DDT					0.020																	
METHOXYCHLOR (MARIATE)					0.020				P	100	400	400	F	6000	2000	500	2000	50	2000	400	-	D
ENDRINE ALDEHYDE					(0.030)																	
ENDRIN KETONE					(0.030)																	
CHLORDANE					(0.020)				P	-	ZERO	2	F	60	60	0.5	0.5	0.045	2	-	3	B2
ALPHA CHLORDANE					0.020																	
GAMMA CHLORDANE					0.020																	
TOXAPHENE					(0.25)				P	5	ZERO	5	F	500	40	-	-	100	-	-	3	B2
AROCLOR 1016					0.10				P	-	ZERO	0.5	P	-	-	1	4	-	-	-	0.5	B2
AROCLOR 1221					0.10				P	-	ZERO	0.5	P	-	-	1	4	-	-	-	0.5	B2
AROCLOR 1232					0.10				P	-	ZERO	0.5	P	-	-	1	4	-	-	-	0.5	B2
AROCLOR 1242					(0.10)				P	-	ZERO	0.5	P	-	-	1	4	-	-	-	0.5	B2
AROCLOR 1248					(0.10)				P	-	ZERO	0.5	P	-	-	1	4	-	-	-	0.5	B2
AROCLOR 1254					(0.10)				P	-	ZERO	0.5	P	-	-	1	4	-	-	-	0.5	B2
AROCLOR 1260					(0.10)				P	-	ZERO	0.5	P	-	-	1	4	-	-	-	0.5	B2

REVISION #1, EFFECTIVE 3 APRIL 1989

[illegible]

**sample:**

### ANALYTICAL DATA AND RELATED HEALTH ADVISORY TABLE

REVISION #1, EFFECTIVE 3 APRIL 1989

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1

These Two Parameters Are Reported As A Total  
These Two Parameters Are Reported As A Total  
These Two Parameters Are Reported As A Total  
Secondary Maximum Containment Levels (ug/L).  
Values In Parentheses Are Estimates. Actual Values Are Being Determined At This Time.

# DESCRIPTION AND QUALIFIERS

The following are descriptions of the 19 columns listed on the table and the qualifiers to clarify the analytical and health related values.

Column	Description
1. Sample Collection Information and Parameters.	The compounds and analytes analyzed for on this water sample.
2. Detection Limits	The detection limits that a laboratory must meet as part of the analytical service contact.
3. Sample Results	The value determined by this analysis.
4. Lab Blank	Laboratory contamination that may be found in the laboratory blank. A quality control check.
5. Comments	The water reviewer's comments on the usability of the value in the Sample Results column.
6. Status Reg	F-final D-draft L-listed for regulation P-proposed (Phase II draft proposal, based on levels proposed in 1985).
7. NIPDWR-	National Interim Primary Drinking Water Regulations: refers to the <u>interim</u> regulatory requirements under the Safe Drinking Water Act (SDWA) of 1974. The NIPDWR specified maximum allowable levels for 22 different contaminants at the consumer's drinking water tap. These interim standards, known as Maximum Contaminant Levels (MCL), were promulgated for 22 contaminants in March 1975, with the intention of revising and promulgating the final National Primary Drinking Water Regulations (NPDWR) a few years later. The values listed in this column are the original MCLs assigned under the <u>interim</u> regulations. The NPDWRs were effected under the SDWA Amendments of June 19, 1986. These revised regulations specify MCLs or treatment techniques for additional contaminants. At this time, 8 additional contaminants (synthetic volatile organic chemicals) have also been assigned MCLs. (Code of Federal Regulations, Chapter 40, part 141, <u>et seq.</u> )
8. MCLG-	Maximum Contaminant Level Goal: Under the National Primary Drinking Water Regulations, the term MCLG now replaces the previous term RMCL or recommended Maximum Contaminant Levels. Under the 1986 SDWA Amendments, any NPDWR which establishes an MCL must also simultaneously publish an MCLG at the time of proposed rulemaking and promulgation. The MCLG is the maximum level of a contaminant at which no known or anticipated adverse human health effects would occur, and which include an adequate margin of safety. MCLGs are nonenforceable health goals.



9. MCL-

Maximum Contaminant Level: Derived from the MCLG, the MCL is the maximum permissible level of a contaminant in drinking water which is delivered to the consumers' tap and used by the general public for drinking. MCLs are legally enforceable. The standards reflect the best achievable levels considering the occurrence, relative source contribution factors, monitoring capability, cost of treatment, available technology and health effects. The standards listed in this column for each contaminant under the NIPDWR are either newly promulgated or revised from the NIPDWR. In a few cases, the enforceable standard has changed; however, in most cases (when comparing columns headed NIPDWR and MCL) the existing interim standard has been revised or has been newly developed.

10. Status HA

F-final

D-draft

L-listed for regulation

P-proposed (Phase II draft proposal, based on levels proposed in 1985).

Health Advisories

The Health Advisory (HA) program is sponsored by the Office of Drinking Water (ODW), and provides information on the health effects, analytical methods and treatment technology useful for dealing with drinking water contamination. Health advisories describe nonregulatory concentrations of drinking water contaminants at which adverse health effects would not be anticipated to occur over specific exposure durations. Health advisories contain a margin of safety, to protect sensitive members of the population. The Health Advisories are developed for one-day, ten-day, longer term and lifetime exposures based on data describing non carcinogenic endpoints of toxicity. The advisories are intended to serve as informal technical guidance to assist Federal, State, and local officials when emergency spills or contaminant situations occur. THEY ARE NOT CONSTRUED AS LEGALLY ENFORCEABLE FEDERAL STANDARDS AND ARE SUBJECT TO CHANGE AS NEW INFORMATION BECOMES AVAILABLE.

Health Advisory values for the adult are derived in the same way as for the 10-kg child. Again, certain assumptions are made: The adult is assumed to weigh 70-kg and consume 2 liters of water per day.

10-KG Child

11. 1 day

12. 10 day

13. Longer term

The child is assumed to be a more sensitive population entity. Included in this assumption, is that the body weight of a child is 10 kg and that one liter of water per day is ingested. Under these and other assumption specific to the available toxicological data bases, Health Advisory values have been derived and listed in the respective columns for one-day, ten-day, and longer term exposures. Longer term is defined as approximately 7 years, or 10 percent of an individual's lifetime.

70-KG Adult

14. Longer term

As with the 10-kg child, longer term exposure is approximately 7 years or 10 percent of an individual's lifetime.

15. RfD	<p><u>Reference Dose:</u> formerly known as the Acceptable Daily Intake (ADI), the RfD is an estimate of a daily exposure to the human population (including sensitive subpopulations) that is likely to be without appreciable risk or deleterious effects over a lifetime. The RfD is expressed in units of daily dose.</p>
16. DWEL	<p><u>Drinking Water Equivalent Lifetime:</u> The medium-specific (i.e., drinking water) lifetime exposure level, assuming 100 percent exposure from that medium, at which adverse noncarcinogenic health effects would not be expected to occur. The DWEL is derived from multiplying the RfD by the adult body weight (70kg) and divided by the adult daily water consumption (2 liters/day)</p>
17. Lifetime	<p><u>Lifetime Health Advisory:</u> This value is determined by factoring in other sources of exposure to the particular contaminant. The relative source contribution from drinking water is based on actual exposure data. If data are unavailable, a value of 20 percent is assumed for synthetic organic chemical contaminants and a value of 10 percent assumed for inorganic chemical contaminants. The lifetime Health Advisory is determined by multiplying the DWEL by the relative source contribution from drinking water.</p>
18. $\mu\text{g/L}$ as $10^{-4}$ Cancer Risk	<p>This column contains values indicating the concentration of the particular contaminant in drinking water that would produce as <math>10^{-4}</math> excess lifetime cancer risk. Simply stated, if a group of 10,000 persons was exposed to the contaminant at its respective concentration listed in this column, then one individual in the group might be expected to develop cancer (above background incidence) solely from exposure to that contaminant in drinking water.</p>
19. Cancer Group	<p>The Office of Health and Environmental Assessment (OHEA) within EPA's Office of Research and Development (ORD) has developed guidelines for carcinogen risk assessment. These guidelines discuss weighing the evidence that a substance is a carcinogen, and classifying the chemical into one of five groups, based on the weight of evidence:</p> <p>Group A - Human carcinogen</p> <p>Group B - Probable human carcinogen</p> <p>Group B consists of two sub-classifications:</p> <p>B<sub>1</sub> - limited human evidence but sufficient animal evidence</p> <p>B<sub>2</sub> - Sufficient animal evidence, but inadequate or no human evidence</p> <p>Group C - Possible human carcinogen</p> <p>Group D - Not classified as to human carcinogenicity</p> <p>Group E - Evidence of noncarcinogenicity for humans</p>

Qualifiers Used For The Health Related Table

NA - not applicable

PS - performance standard 0.5 NTU - 1.0 NTU

TT - treatment technique

\*\* - no more than 5% of the samples may be positive. For systems collecting fewer than 40 samples/month, no more than 1% may be positive.

\*\*\* - guidance

- \* - large discrepancies between Lifetime and Longer term HA values may occur because of the Agency's conservative policies, especially with regard to carcinogenicity, relative source contribution, and less than lifetime exposures in chronic toxicity testing. These factors can result in a cumulative UF (uncertainty factor) of 10 to 1,000 when calculating a Lifetime HA.

2306:6

**I. ONLY DETECTABLE CONCENTRATIONS ARE REPORTED.**

**II. The following are the qualifiers used to define the organic and inorganic analytical data.**

**A. Organics**

FOOTNOTE	DEFINITION	INTERPRETATION
U	Indicates compound was analyzed for but not detected.	Compound was not detected.
J	Indicates an estimated value.	Compound value may be semi-quantitative.
UJ	Quantitation limit is estimated due to a Quality Control (QC) protocol.	Compound was not detected.
C	This flag applies to pesticide results where the identification has been confirmed by GC/MS. Single component pesticides >10 ng/ul in the final extract shall be confirmed by GC/MS.	Compound was confirmed by mass spectroscopy
B	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.	Compound value may be semi-quantitative if it is <5x the blank concentration (<10x the blank concentrations for common lab artifacts: phthalates, methylene chloride, acetone, toluene, 2-butanone).
E	This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. This flag will <u>not</u> apply to pesticides/PCBs analyzed by GC/EC methods.	Compound value may be semi-quantitative.
D	This flag identifies all compounds identified in an analysis at a secondary dilution factor.	Alerts data user to a possible change in the CRQL.
A	This flag indicates that a TIC is a suspected aldol-condensation product.	Alerts data user of a lab artifact.
R	Results are unusable due to a major violation of QC protocol.	Compound value is not usable.

**B. Inorganics**

FOOTNOTE	DEFINITION	INTERPRETATION
OLD E	Estimated or not reported due to interference. See laboratory narrative.	Compound or element was not detected or value may be semi-quantitative.
S	Analysis by Method of Standard Additions.	Value may be quantitative.
R	Spike recoveries outside QC protocols which indicates a possible matrix problem. Data may be biased high or low. See spike results and laboratory narrative.	Value may be quantitative or semi-quantitative.
•	Duplicate value outside QC protocols which indicates a possible matrix problem.	Value may be semi-quantitative.
+	Correlation coefficient for standard additions in less than 0.995. See review and laboratory narrative.	Data value may be biased.
[ ]	Value is real, but is above instrument DL and below CRDL.	Value may be quantitative or semi-quantitative.
UJ	DL is estimated because of a QC protocol. DL is possibly above or below CRDL.	Compound or element was not detected.
J	Value is above CRDL and is an estimated value because of a QC Protocol.	Value may be semi-quantitative.
U	Compound was analyzed for but not detected.	Compound was not detected.
M	Duplicate injection precision not met.	Value may be semi-quantitative.
W	Post digestion spike for furnace AA analysis is out of control limits (35-115%), while sample absorbance is <50% of spike absorbance.	Value may be semi-quantitative.

**C. Analytical Procedure Qualifiers for Inorganic Analysis**

"P" for ICP  
 "A" for Flame AA  
 "F" for Furnance AA  
 "CV" for Manual Cold Vapor AA  
 "AV" for Automated Cold Vapor AA  
 "AS" for Semi-automated Spectrophotometric  
 "C" for Manual Spectrophotometric  
 "T" for Titrimetric  
 "NR" if the analyte is not required to be analyzed.

**D. Analytical Method Qualifiers for Inorganic**

**"P" for ICP**

**"A" for Flame AA**

**"F" for Furnance AA**

**"CV" for Manual Cold Vapor AA**

**"AV" for Automated Cold Vapor AA**

**"AS" for Semi-automated Spectrophotometric**

**"C" for Manual Spectrophotometric**

**"T" for Titrimetric**

**"NR" if the analyte is not required to be analyzed.**

246 N. High Street  
Post Office Box 118  
Columbus, Ohio 43266-0118  
Telephone (614) 466-3543



RICHARD F. CELESTE  
Governor

RECEIVED

OCT 05 1989

Pre-Release  
11/1/89

October 2, 1989

Ronald L. Gray  
State Route 7, Box 9  
Toronto OH 43964

Dear Mr. Gray:

Enclosed is a copy of a specific laboratory sample collected from the water well located at the above address. The sample was collected by representatives of the United States Environmental Protection Agency.

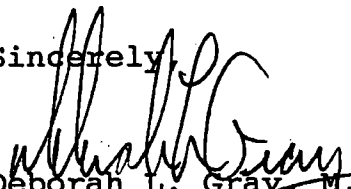
The concentration of sodium exceeded certain Health Related Guidance Values at the date and time of sampling. Sodium is a major component of brine and is also found in road salt for ice control. Sodium is also found naturally occurring in many foods. The daily sodium intake of the average American is much higher than the actual physiological body requirement. The American Heart Association recommends that persons on a low sodium diet drink water containing no more than 20,000 parts per billion (ppb) of sodium. The concentration of sodium in your well was 47,400 ppb.

One will also find other compounds listed in the laboratory results, none of which approached any health related standards. For the most part, these compounds can be found in all naturally occurring water.

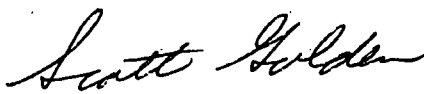
Please feel free to contact us at (614) 644-6447 (Deborah Gray) or (614) 466-1390 (Scott Golden) if you have any questions concerning your water supply.

Ronald L. Gray  
October 2, 1989  
Page Two

Sincerely,



Deborah L. Gray, M.S.  
Branch Chief  
Toxicology Branch  
Division of Epidemiology & Toxicology  
Ohio Department of Health  
P.O. Box 118  
Columbus, Ohio 43266-0118



Scott Golden, R.S., M.S.E.H.  
Program Administrator  
Private Water System & Household Sewage Disposal Program  
Division of Local Environmental Health Program Mgmt. Services  
Ohio Department of Health  
P.O. Box 118  
Columbus, Ohio 43266-0118

/ts:TS39

Enclosure

cc: William D. Messinger, U.S. EPA  
Mark Besel, Ohio EPA  
Jefferson County Health Department